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*BULLETIN OF THE  
UNIVERSITY OF MISSOURI*

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VOL. III.

May, 1902.

NO. 5.

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Announcement

OF THE

DEPARTMENT OF MEDICINE

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1902-1903.

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Published by the University of Missouri. Issued monthly. Application  
has been made to the Department for entry of this publication  
as second-class matter.

## CALENDAR

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- 1902—September 4, 5, 6, 8..... Entrance Examinations  
September 9, Tuesday.....First Semester Begins  
November 26, Wednesday, 4 p. m., to December 1,  
Monday, 8:30 a. m.....Thanksgiving Holidays  
December 16, Tuesday.....Quarterly Meeting of the Curators  
December 23, Tuesday, at 12:30 p. m., to.....
- 1903—January 5, Monday, at 8:30 a. m..... Christmas Holidays  
January 9, Friday .....Memorial Day  
January 23-31.....Mid-Year Examinations  
February 3, Tuesday.....Second Semester Begins  
May 22 to May 30.....Final Examinations  
May 31, Sunday .....Baccalaureate Sermon  
June 1, Monday.....Class Day  
June 2, Tuesday .....Alumni Day  
June 3, Wednesday .....Commencement Day

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## DEPARTMENT OF MEDICINE

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### FACULTY.

RICHARD HENRY JESSE, LL. D.,

*President.*

ANDREW WALKER MCALESTER, A. M., M. D., LL. D.,

*Dean of the Faculty, and Professor of Surgery.*

WOODSON MOSS, M. D., LL. D.,

*Professor of the Practice of Medicine and Therapeutics.*

MILLARD LEWIS LIPSCOMB, A. M.,

*Professor of Physics.*

JOHN WALDO CONNAWAY, D. V. S., M. D.,

*Professor of Comparative Medicine.*

SIDNEY CALVERT, B. Sc., A. M.,

*Assistant Professor of Chemistry.*

WILLIAM GEORGE BROWN, B. S., Ph. D.,

*Professor of Chemistry.*

GEORGE LEFEVRE, B. A., Ph. D.,

*Professor of Zoology.*

CLARENCE MARTIN JACKSON, M. S., M. D.,

*Assistant Professor (in charge) of Anatomy and Histology.*

CHARLES WILSON GREENE, A. M., Ph. D.,

*Professor of Physiology and Pharmacology.*

WALTER McNAB MILLER, B. S., M. D.,

*Professor of Bacteriology and Pathology.*

GUY L. NOYES, M. D.,

*Professor of Eye and Ear Diseases.*

\*—————,

*Professor of Gynecology and Obstetrics.*

RICHARD B. MOORE, B. S.,

*Instructor in Chemistry.*

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\*To be appointed before the opening of next session.

WINTERTON CONWAY CURTIS, A. B., A. M., Ph. D.,  
*Instructor in Zoology.*

CLARK WILSON HETHERINGTON, A. B.,  
(Professor of Physical Training), *Lecturer on Medical Gymnastics.*

ARTHUR ERMON HACKETT,  
*Lecturer on Climatology.*

ASSISTANTS AND FELLOWS (for 1901-2).

PETER POTTER, B. S.,  
*Assistant in Anatomy.*

CARL MILLER SNEED, M. D.,  
*Assistant in Pathology and Bacteriology.*

ELEXIOUS THOMPSON BELL, B. S.,  
*Fellow in Anatomy.*

CHARLES CLAUDE GUTHRIE, M. D.,  
*Fellow in Physiology.*

HENRY CLAY FREUDENBERGER, B. S.,  
*Fellow in Pathology and Bacteriology.*

LESTER BENNETT GARY, Ph. B.,  
*Fellow in Zoology.*

ROBERT LEE REID, M. D.,  
*Fellow in Chemistry.*

JOSEPH SUMMERS, A. M.,  
*Fellow in Physics.*

THORNTON EASLEY MOORE,  
*Student Assistant in Physiology.*

NON-RESIDENT LECTURERS.

FRANK L. HENDERSON, M. D.,  
*Lecturer on Ophthalmology.*

G. R. HIGHSMITH, B. S., M. D.,  
*Lecturer on Railroad Surgery.*

A. B. MILLER, A. B., M. D.,  
*Lecturer on Gynecology.*

J. E. TEFFT, M. D.,  
*Lecturer on Genito-Urinary Surgery.*

W. A. TICHENOR, M. D.,  
*Lecturer on Gynecology.*

The Medical Department of the University was organized at Columbia in 1872, and instruction was begun in February, 1873.

This Department is open alike to men and to women.

In 1901-2 the number of students enrolled was 90. For names see general catalogue of the University.

#### REQUIREMENTS FOR ADMISSION.

Evidence of good moral character is required in every case.

#### Entrance from Approved Schools:

The applicant must present to the Committee on Entrance by Certificate a certificate or diploma from a literary or scientific college, normal school, or high school, or one of equal grade, approved by the University.

A list of approved schools is published in the general catalogue of the University.

It is important that such applicants not from approved schools as are able to do so should present to the President of the University certificates from the president of a college or normal school, or the principal of a high school or academy, showing the work finished with passing grades.

#### Entrance by Examination:

Students whose diplomas or certificates are not accepted by the Committee on Entrance by Certificate must submit to an examination.

Twelve units are required for admission, of which at least two must be in English, and one in Algebra. A list of the subjects which may be offered for entrance is given below. The "Maximum" column indicates the maximum number of units which may be offered in each subject. The "Minimum" column indicates the minimum number of units which can be allowed in each subject, if that subject be offered at all.

SUBJECTS.	Maximum	Minimum.	SUBJECTS.	Maximum	Minimum.
English ..	4	2	French ..	3	1
Algebra ..	2	1	Spanish ..	3	1
Plane Geometry ..	1	1	Physics ..	2	1
Solid Geometry ..	$\frac{1}{2}$	$\frac{1}{2}$	Chemistry ..	2	1
Plane Trigonometry ..	$\frac{1}{2}$	$\frac{1}{2}$	General Biology ..	2	1
History ..	4	1	Zoology ..	2	1
Latin ..	4	1	Botany ..	2	1
Greek ....	3	1	Drawing ..	1	1
German ..	3	1	Shopwork ....	1	1

One unit in any subject is, in general, the equivalent of a year's work in that subject in a good high school. For particulars, consult the general catalogue of the University.

#### **Admission to Advanced Standing:**

Every applicant for advanced standing will be required to present credentials from an accredited college, showing satisfactory completion of courses equivalent to those already attended by the class to which he seeks admission. Moreover, the usual entrance requirements must be satisfied, and evidence of good moral character must be offered.

Applications for advanced standing should be addressed to the Dean of the Medical Department.

#### **Special Students:**

Students may be admitted to the Medical Department without passing the regular examination required for entrance, under the following conditions: (1) They must be at least 21 years of age; (2) they must show good reason for not taking a regular course; (3) they must pass such examination or other tests as shall demonstrate fitness to pursue profitably the subjects selected by them; (4) they will not be allowed to take work in more than two subjects with such kindred work as the Head Professor may suggest; (5) they must furnish evidence of good moral character. Such students are expected to do specially good work in the subjects which they choose. If at any period of the session their work becomes unsatisfactory in one or both of the two major subjects, their connection with the University shall be severed by the Dean of the Department.

#### **PLAN OF INSTRUCTION.**

The curriculum is carefully graded so that the various branches are taken up in their natural order. In the opinion of the Faculty, the student obtains the best results by confining his first two years to purely scientific subjects. The fundamental sciences must be mastered before he can understand the technical and clinical Medicine taught in the third and fourth years. In the clinical instruction the underlying principle is the same as that applied in the scientific laboratories. *By the laboratory method the student actually does the work himself; and if the work is not satisfactorily done, he must repeat it until he is proficient.* The student by this plan of instruction becomes familiar with the instruments and the methods of scientific study and acquires skill in scientific diagnosis of disease which are invaluable in the actual practice of Medicine.

Instruction is given by lectures, recitations, clinical teaching, demonstrations, laboratory work, and conferences in which teacher and students informally discuss topics, or themes, written by members of the class.

#### COMBINED MEDICAL AND ACADEMIC COURSES.

It is the policy of the Medical Department to encourage in every way possible the gaining of a liberal education as a sound preparation for the professional study of Medicine.

Students who expect to study Medicine are strongly urged to take first a scientific course in the Academic Department. By a proper choice of electives, the Academic student may obtain work equivalent, with the exception of Bacteriology and Pathology, to the first two years of the Medical course. He may then enter the Junior Medical class, and thus secure both an Academic and a Medical degree in six years.

In order to accomplish this, the student, while in the Academic Department, should elect the following Courses: Anatomy 1a, 2b, 3, 4, 5; Chemistry 2, 4, 5, 6; Physics 3; Physiology 2, 3a, 4b; Zoology 1, 2, 4b; Hygiene 4a. The Bacteriology and Pathology of the Second Year of Medicine must be provided for in addition to the Academic work.

The following sequence of studies is recommended:

First Year.—Chemistry 2, Physics 3, Zoology 1, Anatomy 1a.

Second Year.—Chemistry 4, Zoology 2, Anatomy 2b, 4.

Third Year.—Chemistry 5, Zoology 4b, Anatomy 3, 5.

Fourth Year.—Chemistry 6, Physiology 3, 4a, 5b, Hygiene 4a.

Additional electives sufficient to make a total of 15 hours a week each semester. A reading knowledge of German and French is very desirable.

With the consent of their Dean, Medical students may take work offered in the Academic Department and in the School of Agriculture and Mechanic Arts, but the total number of hours shall not exceed 18 a week.

#### NEW MEDICAL BUILDING.

Forty thousand dollars has been appropriated for a new Medical Building. This provides for a handsome and commodious building which is now being erected. The plans provide for about twenty-two thousand square feet of floor space besides a large basement. In this building will be brought together the lecture rooms, laboratories, and offices for Anatomy, Histology, Physiology, Pathology, Bacteriology, Hygiene, Pharmacology and Toxicology. The basement will be devoted to aquaria rooms, animal rooms, shop, and rooms for special lines of research. Here, also, will be located a modern well-equipped cold storage plant with accessory preparation rooms for Anatomy. The cold storage plant, for which a special appropriation of \$5,000 was made, will also provide for a cold storage room in the Hospital.



PARKER MEMORIAL HOSPITAL.

STAFF.

Andrew Walker McAlester, M. D....Superintendent and Visiting Surgeon  
Woodson Moss, M. D.....Visiting Physician  
Richard Foster Rand, M. D.....Resident Surgeon  
\*-----Gynæcologist and Obstetrician  
Guy L. Noyes, M. D.....Ophthalmologist and Otologist  
Jean O. Kay.....Superintendent of Nurses

\*To be appointed before the opening of the next session.

By the gift of Wm. L. Parker, the Medical Department is supplied with an excellent Hospital, which is now completed and in operation. In the words of the donor, it is "for the benefit of the Medical Department." This building is a handsome modern structure, conveniently located on high ground at the west edge of the Campus. The building is heated by steam, lighted by gas and electricity, and well ventilated.

By the gift of Adolphus Busch a handsome Clinical Amphitheatre has been erected in connection with the Hospital.

The Hospital is a State Hospital, owned and controlled by the University, and is open to the sick of Missouri under the following conditions:

The Hospital is designed for the treatment of accidents, of acute and subacute diseases, and of chronic curable diseases. Cases of incurable or contagious diseases or of acute alcoholism will not be admitted.

One purpose of the Hospital is to furnish clinical instruction to the students of the Medical Department, in order that by the observation and study of disease they may be fitted to practice medicine intelligently. Accordingly, all patients in the public wards are under the observation of groups of the Senior students, led by a Professor from the Medical Department. The patients serve to illustrate the nature of disease, its course, and its treatment. In the use of patients in this way nothing is done to offend their sensibilities, and their interest and welfare are constantly and sacredly conserved by those in charge of the Hospital.

Patients suffering from severe accidents or serious illness may be brought to the Hospital at any hour of the day or night. Other patients are admitted between the hours of 10 a. m. and 5 p. m. They must apply in person at the Hospital, to be examined for admission, or if unable to apply in person, they may be visited by the examining physician at their homes on application to the Hospital.

Patients living outside of Columbia must make application in writing through some reputable physician and send a statement of the nature of their disease. All patients must pay the charges as provided for



in the rules. A limited number of private cases can be accommodated.

Cases sent in by outside physicians come under the control of the Hospital Staff, the medical cases coming under the care of the regular visiting physician and the surgical cases under the care of the regular visiting surgeon. The family physician will be admitted to the Hospital to consult with the visiting staff.

*Rates.*—Public ward, \$7 a week; single room, \$10 to \$15 a week.

These charges include board and ordinary nursing and medicines. Operative cases are subject to extra charge for surgical dressings, etc.

Operative cases receive special nursing for 24 hours after the operation, or longer if deemed necessary. Further special nursing if desired by the patient will be charged for at the rate of \$2 a day. No fees for operations or for medical and surgical attendance are charged clinical patients, whether in wards or in single rooms.

Patients requiring operations must deposit beforehand sufficient money to cover their expenses for the time they will probably have to remain in the Hospital. The unused balance of the deposit will be refunded when the patient is discharged.

Patients requiring medical attendance must deposit in advance money for one week's board at least and more if it be required. Board is payable in all cases weekly in advance.

*Private Cases.*—A limited number of private cases are received. The charges are \$15 a week and upwards for ordinary medicines, nursing, and board. Private cases are required to pay a fee to the medical or surgical attendant.

#### BUSCH CLINICAL AMPHITHEATRE.

By the gift of Adolphus Busch a handsome Clinical Amphitheatre is provided adjoining the Hospital. The seating capacity is about 100. In the basement of the Amphitheatre a number of commodious rooms are provided for the work in Dispensary Clinics.

In the various clinics, so far as is compatible with the safety of human life, the student himself does the work. He makes his own examinations and observations, studies carefully the progress of the disease, and finally submits a detailed written report of the case to the remainder of the class for discussion. Much stress is laid upon bedside clinics.

The Boone County Infirmary with capacity of 100 is located near Columbia. It furnishes a considerable variety of medical and surgical clinics. Members of the Faculty belong to the consulting staff.

#### LABORATORIES.

The scientific laboratories (Anatomy, Histology, Pathology, Bacteriology, Physiology, Embryology, Chemistry, and Physics) are in charge of

men who give their whole time to teaching, writing and research.

*Anatomy and Histology.*—The Anatomical laboratories are well equipped with tables, lockers, apparatus for injection, etc. Owing to improved methods of preservation, human dissecting material is available throughout the entire year.

The department possesses a museum collection, which is efficient for purposes of practical instruction. It consists of several complete series of body sections, a variety of preserved dissections in human anatomy, a collection of foetal and adult skeletons, mounted and unmounted, specimens illustrating comparative anatomy, and a collection of anatomical models, prominent among which are a life-size Auzoux plastic man, female pelvis, etc.

The Histological laboratory is equipped with new Leitz microscopes, microtomes, paraffin baths, and apparatus, reagents, and material necessary for a thorough study of practical microscopic anatomy. In order to give ample individual instruction in this work, the students are divided into sections of about twenty each.

*Embryology.*—The laboratory of Embryology is well equipped with microscopes, microtomes, incubators, and other apparatus required for the work. An excellent collection of models, charts, and preserved specimens, and also a stereopticon with several hundred views, are available for instruction.

*Pathology and Bacteriology.*—The Pathological laboratory is equipped with cabinets, microscopes, etc. This laboratory is separated in space from that of Bacteriology.

The Bacteriological laboratory is well equipped with microscopes, incubators, a microtome, different sterilization apparatus for low and high pressures, centrifuge, and many other pieces of apparatus necessary for the practical study and investigation of bacteriology and hygiene. The laboratory also possesses a good collection of living bacteriological cultures, which enable the Medical student to see and study those microbes that are of the greatest practical importance.

*Physiology and Pharmacology.*—The laboratories for Physiology and Pharmacology are supplied with glassware, chemicals and microscopes and with duplicate sets of physiological apparatus for general student use. There is also a good selection of special pieces of apparatus for demonstration and for research.

*Chemistry.*—There are at present in use 4 laboratories, 2 balance rooms, 2 lecture rooms, 2 private laboratories, and 1 preparation room. There are lockers for 250 students and desk-room for 125 working at one time. Accommodation is reserved for 90 Medical students working in medical, inorganic, and organic Chemistry, and qualitative and urinary analysis, and ample facilities are provided for special work.

*Physics.*—The laboratories are large and well equipped with apparatus for laboratory work, and for illustrating the lectures in Physics.

#### LIBRARY.

A special room for the Medical Library is provided in the new building. The principal scientific and medical journals are received regularly and placed on file. Moreover each Chair has its own special library of technical works, all of which are accessible to Medical students. All the libraries of the University have together about 48,000 bound volumes, not including duplicates.

#### DEGREES.

Upon a satisfactory completion of the course, the degree of Doctor of Medicine is conferred.

#### SCHOLARSHIP.

The Rollins Scholarship in the Department of Medicine is a prize of fifty dollars which is awarded to that member of the Junior (Third Year) class who has made the best record during the course.

#### FELLOWSHIPS.

Fellowships are annually established in any subject where such additional teaching force may be required. They are appointed by the Board of Curators, are required to teach five or six hours a week, and receive for this service \$200 with exemption from the payment of fees.

These Fellowships are open to Medical students who hold a Bachelor's degree. In extraordinary cases undergraduates may be appointed, but in such cases they are known as Student Assistants and receive only \$150.

During the year 1901-2 Fellowships were held in Anatomy, Chemistry, Pathology, Physiology, and Zoology. A student assistant was appointed in Physiology.

# COURSE OF INSTRUCTION.

	First Semester.	Second Semester.
<i>First Year.</i>		
Anatomy .....	6	6
Osteology .....	3	—
Histology .....	3	3
Chemistry .....	3	6
Physics .....	3	3
<i>Second Year.</i>		
Anatomy.....	3	3
Physiology.....	6	4
Pharmacology.....	—	2
Chemistry .....	3	—
Bacteriology.....	6	—
Pathology.....	—	6
Embryology .....	—	3
<i>Third Year.</i>		
Therapeutics.....	3	3
Practice of Medicine .....	3	3
Comparative Medicine.....	3	—
Clinical Pathology.....	3	—
Hygiene .....	3	—
Principles of Surgery .....	—	3
Obstetrics.....	—	3
Dispensary Clinics.....	—	3
<i>Fourth Year.</i>		
Clinical Medicine.....	3	3
Clinical Surgery .....	3	3
Obstetrics.....	3	—
Gynæcology .....	3	3
Medical Jurisprudence.....	—	1
Diseases of Eye and Ear.....	3	3
Climatology .....	—	1
Medical Gymnastics.....	—	1

## Courses in Detail

[The letter (a) after the number of a course indicates that it is given in the first semester only; the letter (b) that it is given in the second semester only. Simple numbers indicate that the Course runs through the year.]

### ANATOMY AND HISTOLOGY.

Assistant Professor JACKSON; Mr. POTTER; Mr. BELL.

1a. Osteology. A complete unmounted skeleton is issued to every two students for their use during this Course. A deposit is required which is refunded when the skeleton is returned uninjured. *T. Th. S., at 8:30.* First Year.

2. Practical Anatomy. Lecture, Section I, *M.*, Section II, *F.*, at 10:30; Laboratory, Section I, *M. W.*, Section II, *T. F.*, 1:30-4. First Year.

3. Descriptive Anatomy. A recitation and demonstration Course in systematic human anatomy. Text, Gray's Anatomy, 15th Edition. *M. W. F., at 8:30.* First Year.

4. Normal Histology. Each student prepares, stains and mounts permanently at least 50 specimens of normal tissue. Lecture, *W.*, at 10:30; Laboratory, Section I, *T. F.*, Section II, *M. W.*, 1:30-4:00. First Year.

5a. Neurology and Dissection. Including the central nervous system; sense organs, and the completion of human dissection. *M. W. F.*, 1:30-4:00. Second Year.

5b. Topographic Anatomy. A study of the topography of the various organs by means of serial sections through the entire body. Lectures and laboratory. *M. W. F.*, 1:30-4:00.

6. Investigation. Elective.

For details concerning Course 6, see announcement of Academic Department, in the general catalogue of the University.

### ZOOLOGY.

Professor LEFEVRE; Dr. CURTIS; Mr. GARY.

4b. Comparative Embryology of Vertebrates. This Course is designed to give a general knowledge of Vertebrate Embryology, and to furnish an introduction to Obstetrics. In the laboratory the development of the chick is carefully studied from preparations of entire embryos and from sections representing successive stages throughout the development. These observations are used as a basis of comparison with the development of higher forms, including man. Such questions as ovulation, menstruation, determination of the age of embryos, relation of the embryo to the uterus, and the mechanism of nutrition of the embryo, receive special attention. Lecture, *T.*, at 8:30; Laboratory, *T.*, 9:30-12:30, *Th.*, 8:30-10:30.

## CHEMISTRY.

Professor BROWN; Assistant Professor CALVERT; Mr. MOORE; Dr. REID.

General Chemistry. This Course consists of lectures, recitations, and laboratory work, lasting three semesters, including general descriptive inorganic and organic Chemistry, theoretical and physical Chemistry, toxicological Chemistry, qualitative chemical analysis, physiological Chemistry and urinary analysis, with special reference to the needs of the student in medicine, pharmacy, physiology, pathology, hygiene, and toxicology so far as the time will permit. During the whole course the theoretical conceptions of Chemistry are not neglected, and an attempt is made to present the science of Chemistry as a consistent unity. Recitations are regularly held, covering the text and lectures, and from time to time written work is or may be required.

The laboratory work is carried along with the lectures and recitations. For this work each student is provided with desk room and apparatus of his own. Practical exercises are required in the examination of water, air, general qualitative chemical analysis, the detection of poisons (inorganic and organic), the preparation and testing of inorganic compounds, the preparation of some typical hydrocarbons, alcohols, acids, fats, the estimation of urea and the sugars, the reactions of uric acid, of the principal alkaloids, and other important organic compounds, and incidentally the detection of adulterations. *Three times a week, first semester. T. Th. S., 9:30-12. Five times a week, second semester. T. Th. S., 8:30-12; Th. S., 1:30-4. First Year. Three times a week, first semester. T. Th. S., 1:30-4. Second Year.*

Texts: Witthaus, The Medical Student's Manual of Chemistry; or Bartley's Text-book of Medical and Pharmaceutical Chemistry; or Attfield's Chemistry General, Medical and Pharmaceutical, including the Chemistry of the United States Pharmacopœia; Hill's Lecture Notes on Qualitative Analysis, and Special Notes of the instructors.

## PHYSICS.

Professor LIPSCOMB; Mr. SUMMERS.

1. General Physics. Emphasis is given to those facts of Mechanics, Sound, Heat, Light and Electricity, which have special application to Medicine and Surgery. Lectures and Recitations, *W., at 9:30; Laboratory, M. F., 9:30-12. First Year.*

## PHYSIOLOGY AND PHARMACOLOGY.

Professor GREENE; Dr. GUTHRIE; Mr. MOORE.

The Courses in Anatomy, Histology, Physics, and Chemistry given in the first year of Medicine, or the conditions outlined in the announce-



ment of the Academic Department in the general catalogue of the University are prerequisites for admission to these Courses.

2. Experimental Physiology. This Course gives a detailed survey of Animal Physiology. Sets of apparatus are provided in the laboratory and selected experiments illustrating the facts and fundamental principles of the subject are performed by the individual student under the personal supervision of the instructors. Lectures, *M. W.*, at 8:30. Laboratory, *M. W.*, 9:30-12. Second Year.

Text-book: American Text-book of Physiology.

3a. Comparative Physiology. The principles of Physiology as illustrated by the simpler forms of animal life. Lecture, *F.*, at 8:30. Laboratory, *F.*, 9:30-12. Second Year.

4b. Pharmacology. This Course presents the physiological action of chemicals. The laboratory experiments are distributed to groups of students and each group is required to demonstrate to the other members of the Course. Lecture, *F.*, at 8:30. Laboratory, *F.*, at 9:30. Second Year.

Text-book: Cushney's Pharmacology and Therapeutics.

#### PATHOLOGY, BACTERIOLOGY, AND HYGIENE.

\*Professor MILLER; Dr. SNEED; Mr. FREUDENBERGER.

1a. Bacteriology. The lectures introduce the student into general questions in Bacteriology—the history of Bacteriology, the nature and development of bacteria, sterilization and disinfection, immunity and disposition, etc. In the laboratory hours the students are instructed in the preparation of culture-media and in the methods of obtaining pure cultures, and in the different staining methods. They study some saprophytic and the most important parasitic bacteria in pure cultures on the different media and the microscopic preparations. Special attention is given to all practical points, the bacteriological diagnosis of cases of infectious diseases, and the bacteriological examination of water, air, and soil. Lectures, *T. Th. S.*, at 8:30. Laboratory, *T. Th. S.*, 9:30-12. Second Year.

2b. Pathology. Lectures and recitations on general questions in Pathology, and on the most important pathological changes found in the different organs of the body. The laboratory hours are devoted to the macroscopical and microscopical study of these changes. Part of the laboratory hours are devoted to the performance of post-mortems. Lectures, *T. Th. S.*, at 11:30. Laboratory, *T. Th. S.*, at 1:30-4. Second Year.

3a. Clinical Pathology. Lectures and recitations on animal parasites and the pathological changes of the liquids and secreta of the body.

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\*Appointment to take effect in September, 1902.

In the laboratory hours the student is instructed in the microscopic examination of blood, milk, urine, sputum, pus, secreta of nose, mouth, and trachea, contents of stomach and intestines, scrapings, etc. Part of the laboratory hours are devoted to the performance of post-mortems. Lecture, *T.*, at 10:30. Laboratory, *W. F.*, 1:30-4. Third Year.

4a. Hygiene. Lectures with demonstrations on the following subjects: History of Hygiene; hygienic conditions of air and soil, with special reference to the influence of climate (acclimatization) upon diseases; general hygiene of cities, dwellings, schools, prisons, etc.; commercial hygiene; ways in which important diseases, such as malaria, typhoid, diphtheria, tuberculosis, pneumonia, influenza, whooping cough, small-pox, measles, scarlet fever, dysentery, cholera, bubonic plague, etc., spread, and the means of preventing these epidemics; vaccination against small-pox, hydrophobia, and other diseases; disinfection with special reference to households and schools, quarantines; organization of boards of health in different countries; value of compulsory registration, vital statistics, etc. Lectures, *M. W. F.*, at 8:30. Third Year.

#### THERAPEUTICS.

Professor MOSS.

1. Therapeutics. Aside from drugs, general therapeutical considerations, such as hydrotherapy, electrotherapy, dietetics, etc., receive due attention. Prescription writing becomes a matter of daily drill, and the elegance or incompatibility is tested by actual preparation by the student. Sections of the class under charge of the instructor visit the Parker Memorial Hospital to familiarize themselves with the technique of the hypodermic syringe, aspirator, cautery, stomach tube, stupe, and with various baths and packs. The student closely follows at the bedside the action of drugs in disease, dietetics, nursing, etc., and reports upon the same. *Three hours a week.* Third Year.

#### MEDICINE.

Professor MOSS.

1. Practice of Medicine. Lectures and recitations and clinics. *Three hours a week.* Third Year.

Text-books: Anders and Osler.

2. Clinical Medicine. Students in this year are required to make written reports of cases in their charge, and to write articles upon subjects assigned. These reports and articles are discussed by the class and the Professor. Monographs and prize essays upon important subjects, by eminent authors, are reviewed before this class, and the students are required to make digests. This Chair possesses a carefully selected li-



brary, to which the students have access. *Three hours a week.* Fourth Year.

3b. Venereal Diseases in relation to Public Health. This Course comprises twenty lectures and is of a semi-popular character. The lectures are fully illustrated by the lantern and slides. The lectures are given from 7:30 to 8:30 one evening each week, second semester. All male students of the University are admitted to these lectures.

#### COMPARATIVE MEDICINE.

Dr. CONNAWAY.

1a. Comparative Medicine. Lectures, laboratories and clinics. This Course is offered to afford the students of human Medicine an opportunity to broaden their knowledge of clinical symptoms and pathological processes. Special attention is given to those diseases of lower animals that are communicable to man. Certain of the non-communicable diseases of the lower animals are considered, where the comparative study is deemed especially important for the better understanding of the corresponding human maladies. The students are made familiar by practical demonstrations with clinical as well as finer methods of diagnosis. They are also instructed in the measures that are employed for eradicating or controlling these sources of infection to man. The library, laboratory, and clinics of the Veterinary department are available as aids to this instruction. *Three hours a week.* Third Year.

2. An opportunity for advanced and research work will be afforded students who have proper preparation. Elective.

#### SURGERY.

Professor MCALESTER; Dr. RAND.

1b. (a) Principles of Surgery. Didactic lectures and recitations, ending with a thorough examination. (b) Operative Surgery. This Course includes (1) bandaging, fracture dressings, etc., (2) operations on the cadaver, (3) operations on the lower animals. As careful attention is paid to details as on the human subject. In this course the student does the work under supervision as in other laboratories. *Three hours a week.* Third Year.

2. Clinical Surgery. This course will be given at the Parker Memorial Hospital and the Boone County Infirmary. *Three hours a week.* Fourth Year.

#### OBSTETRICS AND GYNÆCOLOGY.

\*Professor \_\_\_\_\_.

1. Obstetrics. Lectures and recitations and clinics. A set of Auzoux

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\*To be appointed before the opening of the next session.

models of the female pelvis, uterus and contents at various periods of gestation, a set of charts, etc., are available for illustration. *Three hours a week. Two semesters. Third and Fourth Years.*

2. Gynæcology. Lectures and recitations and clinics. *Three hours a week. Fourth Year.*

#### OPHTHALMOLOGY AND OTOTOLOGY.

†Professor NOYES.

1. Diseases of the Eye and Ear. Lectures, recitations and clinics. *Three hours a week. Fourth Year.*

#### SPECIAL COURSES.

1b. Massage and Medico-Gymnastics. Lectures and demonstrations on the technique of Massage, and the treatment by gymnastics of asymmetry, malnutrition, or impaired functional processes. *One hour a week. Fourth Year. Professor HETHERINGTON.*

2b. Medical Jurisprudence. *One hour a week. Fourth Year. Professor MCALESTER.*

3b. Medical Climatology. Lectures upon climate as related to health and disease. Special attention is paid to the climatic conditions prevalent at the various health resorts. *One hour a week. Fourth Year. Mr. HACKETT.*

#### PARKER MEMORIAL HOSPITAL TRAINING-SCHOOL FOR NURSES.

The Parker Memorial Hospital Training-school for Nurses is instituted to give three years' training to women desirous of becoming professional nurses.

Those wishing to enter must apply, personally or by letter, to the Superintendent of Nurses at the Hospital, who will furnish instructions respecting the personal information to be given by applicants. The application should be accompanied by a physician's certificate of sound health and unimpaired faculties and two certificates of good character. Applicants must be between the ages of 21 and 35 years, and of at least average height and physique. Women of superior education are preferred.

Candidates, if approved, will be received on probation for three months. They will not be permitted to join the school formally until the end of the third month, when, if accepted, they must sign an agreement to complete the prescribed course of three years, and to conform to all rules.

At the end of the first year, the record of the student will be carefully scrutinized, and the right is reserved to terminate then or at any

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†Appointment to take effect in September, 1902.

time the connection of any student with the school for inefficiency, misconduct, a generally unsatisfactory record, or for any other reason which may be deemed sufficient by the Hospital authorities.

In addition to board, lodging, and a reasonable amount of laundry work, the students will be given \$8 monthly to meet expenses incidental to the training. In sickness the students will be cared for but the time so lost must be made up (and money may be deducted from their allowance).

The course will include practical and theoretical instruction in the nursing of medical, surgical, obstetrical, and gynæcological cases, sick diet cooking, massage, and the application of electricity. Instruction will also be given in anatomy, physiology, bacteriology and hygiene.

The final examinations for the Diploma will be held by members of the medical and surgical staff.

For catalogues of the Medical Department, address Irvin Switzler, Registrar, Columbia, Mo.

For any further information concerning the Medical Department, address,

A. W. McALESTER, M. D., Dean,  
Columbia, Mo.



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VOL. VI, No. 6

JUNE, 1905.

BULLETIN OF THE  
UNIVERSITY OF MISSOURI



DEPARTMENT OF MEDICINE

ANNOUNCEMENT

1905-1906

SESSION BEGINS SEPTEMBER 12

Published by  
The University of Missouri

Issued monthly

Entered April 12, 1902, at Columbia, Missouri, as second-class matter  
under act of Congress of July 16, 1894.

## MEDICAL DEPARTMENT.

### REQUIREMENTS FOR ADMISSION.

The Medical Department is open alike to men and women.  
*Admission to the First Year Class:*

The student must present, either from an accredited school or by examination, twelve (12) units, of which at least three (3) must be in English, and one (1) in Algebra. The remaining eight units must be offered in subjects chosen from the following list: English, Algebra, Plane Geometry, Solid Geometry, Trigonometry, Latin, Greek, German, French, Spanish, General History, English History, American History, Physics, Chemistry, General Biology, Zoology, Botany, Physiography, Drawing. A "unit" is one year's work in a good high school, five periods a week, nine months to the session in any of these subjects. All students are admitted by the Committee on Entrance, to whom application should be made. For further particulars, see the general catalogue.

Beginning with June, 1906, the candidate for entrance to the Medical Department must present college work as follows: English, six (6) hours; German, six (6) hours; General Zoology, six (6) hours; General Physics, six (6) hours; Inorganic Chemistry, six (6) hours. He must also satisfy the entrance requirements specified for the Academic Department.

#### *Advanced Standing:*

Every applicant for advanced standing is required to present credentials from an accredited college showing satisfactory completion of courses equivalent to those for which he seeks credit. Moreover, the usual entrance requirements to the first year class must be satisfied and evidence of a good moral character must be presented to the Dean of the Medical Department.

#### *Special Students:*

Students may be admitted to the Medical Department without passing the regular examinations required for entrance, under the following conditions: (1) They must show good reasons for not taking a regular course; (2) They must pass such examinations or other tests as shall demonstrate fitness to pursue profitably the subjects selected by them; (3) They will be allowed to take work in not more than two subjects, with such kindred work as the Head Professors may suggest. Such students are expected to do specially good work in the subjects which they choose. If



at any period of the session the work becomes unsatisfactory in one or both of the major subjects, their connection with the University shall be severed by the Dean of the Department.

## FEES AND EXPENSES.

No tuition fee is charged in any Department or College of the University. An annual library fee of ten dollars is required of all students, both regular and special, admitted to the Medical Department. In addition, laboratory fees are charged which amount to about \$30 in the first year, about \$60 in the second year, and about \$15 in the third year. Text books and stationery cost from \$25 to \$50 per year.

The two Dormitories for men, Benton Hall and Lathrop Hall, lodge 135 students and meals can be furnished by the University Boarding Club, which is established in the Dormitories, to about 400. All matters of discipline and financial administration are in the hands of a Council elected by the student members. The average cost of table board in the University Boarding Club has not exceeded \$2.00 per week. The cost of room rent, board, lights and laundry to a student living in a dormitory is about \$3.00 per week.

Applications for rooms should be made at an early date to the Secretary of the University, Mr. J. G. Babb. Allotments are made in the order of receipt of applications.

Board and lodging may be obtained in private families at from \$3.00 to \$5.00 a week.

Many students support themselves, wholly or in part, by work of various kinds. The Y. M. C. A. maintains an employment Bureau which renders valuable assistance to those desiring work.

## THE MEDICAL LABORATORY BUILDING.

This handsome and commodious building, devoted primarily to laboratories, was completed in 1902, and is now splendidly equipped to meet the needs of modern laboratory instruction and research. This building brings together the lecture rooms, laboratories and offices for Anatomy, Histology, Physiology, Pathology, Bacteriology, Hygiene, Pharmacology, Physiological Chemistry and Internal Medicine.

Animal rooms, aquaria rooms, mechanic's shops, and special research rooms are provided for. A cold storage plant is devoted to the exclusive needs of anatomical and pathological preparations.

## THE PARKER MEMORIAL HOSPITAL.

### *Clinical Staff.*

Andrew Walker McAlester, M. D...Superintendent and Surgeon  
Woodson Moss, M. D..... Physician  
William J. Calvert, M. D. ....Physician  
Guy L. Noyes, M. D.....Ophthalmologist and Otologist  
Max W. Myer, M. D. .... Gynecologist and Obstetrician  
Walter McNab Miller, M. D.....Pathologist  
Harry R. Haas, M. D.....Interne  
Albert James Campbell, M. D.....Interne  
Josephine Shields, Head Nurse and Supt. Tr'ng Sch. for Nurses

By the gift of Wm. L. Parker, the Medical Department is supplied with an excellent Hospital, which has now been in operation for three years. In the words of the donor it is "for the benefit of the Medical Department." This building is a handsome, modern structure, conveniently located on high ground at the west side of the Campus. The building is heated by steam, lighted by gas and electricity, and well ventilated. The Hospital has beds and accommodations for about 50 patients. It is supplied with a modern equipment in the Medical and Surgical appliances which contribute to the comfort and welfare of the patients.

The Parker Memorial Hospital is a State Hospital, owned and controlled by the University, and is open to the sick of Missouri for the treatment of accidents, of acute and subacute diseases, and of chronic curable diseases. Cases of contagious diseases are not admitted.

The primary purpose of the Hospital is to furnish clinical instruction to the students of the Medical Department, in order that by the observation and study of disease they may be fitted to practice medicine intelligently. The patients serve to illustrate the nature of disease, its course, and its treatment. In the use of patients in this way nothing is done to offend their sensibilities, and their interest and welfare are constantly and carefully regarded by those in charge of the Hospital.



Patients are admitted to the Hospital at any hour of the day or night.

Patients living outside of Columbia should make application, preferably through some physician, sending a statement of the nature of their disease. All the patients entering the Hospital shall come under the control of the Hospital Staff. The family physician will be admitted to the Hospital to consult with the Hospital Staff. All patients must pay the charges provided for in the rules, which are as follows:

Rates:—The general wards, \$7.00 a week; single rooms, \$15.00 a week. These charges include board and ordinary nursing and medicines. Operative cases are subject to extra charge for surgical dressings, etc.

Operative cases receive special nursing for 24 hours after the operation, or longer if deemed necessary. Further special nursing if desired by the patient will be charged for at the rate of \$2 a day. No fees for operations or for medical and surgical attendance are charged clinical patients, whether in general or private wards.

Patients requiring operations must deposit beforehand sufficient money to cover their expenses for the time they will probably have to remain in the Hospital. The unused balance of the deposit will be refunded when the patient is discharged.

Patients requiring medical attention must deposit in advance money for one week's board at least and more if it be required. Board is payable in all cases weekly in advance.

*Private Cases.*—A limited number of private cases are received. The charges are \$15 a week and upwards for ordinary medicines, nursing, and board. Private cases are required to pay a fee to the physician or surgeon in attendance.

*Free Beds.*—A limited number of free beds are thrown open to patients in the Parker Memorial Hospital.

## THE BUSCH CLINICAL AMPHITHEATRE.

A clinical Amphitheatre adjoining the Hospital has been provided by the gift of Adolphus Busch, of St. Louis. It has a seating capacity of about one hundred, is supplied with accessory rooms for sterilizing, anaesthetizing, etc., and has a number of special rooms for the work in dispensary clinics.

The interior of the Amphitheatre has recently been equipped with the medical and surgical accessories of a modern clinic.

An out-patient clinic is now established in Eye, Ear, Nose, and Throat; Internal Medicine; Surgery; and Obstetrics and Gynecology. Students have the opportunity for observing and treating patients in these clinics. The classes are formed into small sections for the purpose, and work always under the responsible direction and criticism of the Instructor in charge.

## THE TRAINING SCHOOL FOR NURSES.

The University maintains a Training School for Nurses in connection with the Medical Department. A three-year course of theoretical and practical instruction is offered and on the completion of the course the candidate is awarded a Certificate of Graduation.

Being connected with the University and having the facilities of our scientific laboratories and of the Parker Memorial Hospital gives to those in training superior advantages, and produces nurses thoroughly competent in the theory and practice of nursing in all its details.

## SCHOLARSHIP.

The Rollins Scholarship in the department of Medicine is a prize of fifty dollars which is awarded to that member of the Junior (Third Year) class who has made the best record during the course.

## COURSE OF INSTRUCTION.

<i>First Year.</i>	<i>First Semester.</i>	<i>Second Semester.</i>
	<i>Hours credit.</i>	<i>Hours credit.</i>
Anatomy .. .. .	5	5
Osteology .. .. .	3	0
Histology .. .. .	4	4
Chemistry .. .. .	3	6
Physics .. .. .	3	3
<i>Second Year.</i>		
Anatomy .. .. .	3	3
Physiology .. .. .	6	4
Pharmacology .. .. .	0	2
Chemistry .. .. .	3	0
Bacteriology .. .. .	3	0
Pathology .. .. .	3	6
Embryology .. .. .	0	3

	<i>First Semester.</i>	<i>Second Semester.</i>
<i>Third Year.</i>	<i>Hours credit.</i>	<i>Hours credit.</i>
Therapeutics . . . . .	2	2
Practice of Medicine . . . . .	3	3
Physical Diagnosis . . . . .	1	1
Clinical Pathology . . . . .	2	2
Hygiene . . . . .	3	0
Pathology . . . . .	3	0
Principles of Surgery . . . . .	3	3
Obstetrics . . . . .	0	3
*Elective . . . . .	1	2
Operative Surgery . . . . .	0	2
<i>Fourth Year.</i>		
Clinical Medicine . . . . .	3	3
Clinical Surgery . . . . .	3	3
Obstetrics . . . . .	3	0
Diseases of Eye and Ear . . . . .	3	3
Gynecology . . . . .	2	2
Medical Jurisprudence . . . . .	0	1
Climatology . . . . .	0	1
*Elective . . . . .	3	3

## MEDICAL AND ACADEMIC COURSES.

It is the policy of the Medical Department to encourage in every way possible the gaining of a liberal education as a sound preparation for the professional study of medicine.

Students of Medicine are strongly urged to take a general scientific course in conjunction with their Medical work. The student in the Medical Department may, by a proper choice of electives in the Academic Department, do his required work in Medicine and at the same time meet the requirements for the degree of Bachelor of Arts (see general catalogue). This, it is true, prolongs the course to at least six years, but the greater power and broader training acquired makes a better and more successful physician. Such students are registered in both Academic and Medical Departments and must fill the requirements of both. Candidates for both A. B. and M. D. degrees are recommended to elect subjects required or which lead up to subjects required in Medicine, in approximately the order suggested by the following tabulated statement, it being presupposed that the subjects in the first and second years, under the title "Electives,"

\*Electives must be chosen from courses offered as "Electives" in the announcement of courses in detail.

shall be from the historical, philosophical, or literary groups and shall include English and either German or French.

# A COURSE LEADING TO THE DEGREES OF A. B. AND M. D. RECOMMENDED BY THE MEDICAL FACULTY.

	<i>First Semester. Second Semester.</i>	
<i>First Year.</i>	<i>Hours Credit.</i>	<i>Hours Credit.</i>
English . . . . .	3	3
Zoology 1 . . . . .	3	3
Elective . . . . .	9	9
<i>Second Year.</i>		
Zoology 2 . . . . .	3	3
Physics . . . . .	3	3
Chemistry . . . . .	3	6
Elective . . . . .	6	4
<i>Third Year.</i>		
Zoology 4b . . . . .	0	3
Chemistry . . . . .	3	0
Histology . . . . .	4	4
Anatomy . . . . .	3	5
Osteology . . . . .	3	0
Elective . . . . .	5	6
<i>Fourth Year.</i>		
Anatomy . . . . .	3	3
Physiology . . . . .	6	4
Pharmacology . . . . .	0	2
Bacteriology . . . . .	3	0
Pathology . . . . .	3	6
Elective . . . . .	3	3

## *Fifth Year.*

(Same as the third year in the four years' course.)

## *Sixth Year.*

(Same as the fourth year in the four years' course.)

With the consent of the Dean, Medical students may take accessory work offered in other Departments of the University, but the total number of hours shall not exceed 18 a week.

## COURSES IN DETAIL.

(Courses designated by a number with the letter *a* attached, thus: 4a, are given the first semester only. Those designated by a number with the letter *b* attached, thus 4b, are given the second semester only. Those designated merely by a number are continuous courses and are given both semesters.)

### ANATOMY AND HISTOLOGY.

*C. M. Jackson, Professor; E. T. Bell, Instructor; C. C. Dubois, C. B. Rodes, Assistants.*

1a. *Osteology.* A complete unmounted skeleton\* is issued to every two students for their use during this course. T. Th. S., at 8. First year.

2. *Descriptive and Practical Anatomy.* Recitations and demonstrations, M. W. F., at 8. Laboratory, Section I, M. W., Section II, T. F., 1:30-4. First Year.

4. *Normal Histology.* Each student prepares, stains and mounts permanently at least 75 specimens of normal tissue. Lecture, W., at 9; Quiz; Section I, F., Section II, W., 11:30. Laboratory, Section I, T. F., Section II, M. W., 1:30-4. First Year.

5a. *Neurology and Dissection.* Including the central nervous system sense organs, and the completion of human dissection. M. W. F., 1:30-4. Second Year.

6b. *Topographic Anatomy.* A study of the Topography of the various organs by means of serial sections through the entire body. Lectures and Laboratory, M. W. F., 1:30-4. Second Year.

7. *Advanced Anatomy.* Advanced work in Anatomy or Histology. Hours to be arranged. Elective.

8. *Investigation.* Elective.

### CHEMISTRY.

*W. G. Brown, Professor; Sidney Calvert, Hermann Schlundt, Assistant Professors; H. W. Doughty, Instructor; E. E. Morlan, F. W. Liepsner, Assistants.*

13. *General Chemistry.* This course consists of lectures, recitations, and laboratory work, lasting three semesters, includ-

\*A deposit of \$10 is required which is refunded less a fee of \$2 when the skeleton is returned uninjured.



ing general descriptive inorganic and organic Chemistry, theoretical and physical Chemistry, toxicological Chemistry, qualitative chemical analysis, physiological Chemistry and urinary analysis, with special reference to the needs of the student in medicine, pharmacy, physiology, pathology, hygiene, and toxicology so far as the time will permit. During the whole course the theoretical conceptions of Chemistry are not neglected, and an attempt is made to present the science of Chemistry as a consistent unity. Recitations are regularly held covering the text and lectures, and from time to time written work is or may be required.

The laboratory work is carried along with the lectures and recitations. For this work each student is provided with desk room and apparatus of his own. Practical exercises are required in the examination of water, air, general qualitative chemical analysis, the detection of poisons (inorganic and organic), the preparation and testing of inorganic compounds, the preparation of some typical hydrocarbons, alcohols, acids, fats, the estimation of urea and the sugars, the reactions of uric acid, of the principal alkaloids, and other important organic compounds, and incidentally the detection of adulterations. *Three times a week, first semester. T. Th. S., 9-12. Five times a week, second semester. T. Th. S., 8-12; Th. S., 1:30-4. First Year. Three times a week, first semester. Th. S., 1:30-4. Second Year.*

*Texts:* Witthaus' The Medical Student's Manual of Chemistry; or Bartley's Text-book of Medical and Pharmaceutical Chemistry; or Attfield's Chemistry: General, Medical, and Pharmaceutical, including the Chemistry of the United States Pharmacopoeia; Moore's A Laboratory Chemistry; Noyes' Qualitative Chemical Analysis, and special notes of the instructors.

## PHYSICS.

*O. M. Stewart, Professor; Charles A. Proctor, Herbert M. Reese, Instructors; H. E. Howe, Assistant.*

1. *General Physics.* An elementary course in Mechanics, Heat, Magnetism, Electricity, Sound and Light. Lectures, W. F., at 10:30; Laboratory, M., 9-12.

## ZOOLOGY.

*George Lefevre, Professor; W. C. Curtis, Assistant Professor; Walter Arthur, T. D. Woodson, H. E. Bradley, Assistants.*

4b. *Embryology of Vertebrates.* The course is designed to lay the foundation of Vertebrate Embryology. In the laboratory the development of the chick is carefully studied from preparations of entire embryos and from sections representing successive stages throughout the development. These observations are used as a basis of comparison with the development of higher forms, including man. Such questions as ovulation, menstruation, determination of the age of embryos, relation of the embryo to the uterus, and the mechanism of nutrition of the embryo, receive special attention. Lecture, T., at 10:30; Laboratory, T., 8-10:30; Th., 8-10:30.

## PHYSIOLOGY AND PHARMACOLOGY.

*C. W. Greene, Professor; W. Koch, Assistant Professor; John M. Riggs, Assistant.*

The courses in Anatomy, Histology, Physics, and Chemistry given in the first year of Medicine are prerequisites for admission to these courses.

1. *Experimental Physiology.* This course gives a detailed survey of Animal Physiology. Individual sets of apparatus are provided in the laboratory and selected experiments illustrating the facts and fundamental principles of the subject are performed by the individual student under the personal supervision of the instructors. Text-book: American Text-book of Physiology. Lectures, M. W. F., at 8; Laboratory, M. W. F., 9-12. Second year to first of April, 10 hours' credit.

3b. *Pharmacology.* This course presents the physiological action of chemicals. The laboratory experiments are distributed to groups of students, and each group is required to demonstrate to the other members of the course. Text-books: Cushny's Pharmacology and Therapeutics; Sollman's Pharmacology. Lecture, M. W. F., at 8; Laboratory, M. W. F., 9-12. Second Year, during April and May two hours' credit.

5. *Advanced Physiology.* Advanced work in Physiology, Pharmacology, or Physiological Chemistry. Hours to be arranged. Elective.

6. *Investigation.* Elective.

## PATHOLOGY, BACTERIOLOGY AND HYGIENE.

*Walter McNab Miller, Professor; W. G. Carhart, Instructor.*

1a. *Bacteriology. Introductory and General.* While essentially a pure science course and intended to give the student a comprehensive view of the whole field of bacteriology, independent of any particular professional application, special attention is given to the technique of the science. The student prepares media, separates and makes pure cultures, sterilizes, incubates, disinfects, and prepares and studies microscopic preparations. The knowledge and practice obtained in this course prepare the student for the further study of the subject as a pure science or for the practical applications of its methods in the study of domestic and municipal hygiene, in agriculture, dairying, brewing, and other industries, in household economics, sanitary engineering, and in veterinary and human medicine. Elective to students who have made the necessary preparation in chemistry, physics and biology. Lectures and laboratory. *Three times a week.* Second Year.

2. *Pathology. General and Comparative.* The conduct of the necropsy,—macroscopic, microscopic, bacteriologic, experimental, writing of protocol. This work includes the study of degeneration, regeneration, inflammation, the effects of poisons, the infections, animal parasites, and tumors. In the study of infections is included the growth of the infectious organisms in pure culture, their examination and the study of their effects upon rabbits, guinea pigs, mice, and other small domestic animals. While the work centers about the post-mortem examination, the radius of operation extends into the field of experimental pathology and is rounded out by the study of preserved material derived from former necropsies or obtained elsewhere. When the work of the student is not directed to the post-mortem examination or demonstration of gross material, about five microscopic sections are given daily to the student for staining, mounting and study. These preparations have a permanent value and become the property of the student. Lectures and laboratory. *Three times a week, first semester; six times a week, second semester.* Second Year.

4a. *Pathology.* Having completed the course in general and experimental pathology, the work of the student is directed to the various pathological conditions of the individual organs. Lectures and laboratory. *Three times a week.* Third Year.



5. *Bacteriology. Research Work.* A limited number of properly qualified students are admitted to the laboratory for work of this kind. The results of such work must be submitted in writing and be of such nature as may be approved for publication.

6. *Pathology. Research Work.* Explanation as given under course 5.

7b. *Hygiene.* Lectures with demonstrations on the following subjects: History of Hygiene; hygienic conditions of air and soil, with special reference to the influence of climate (acclimatization) upon diseases; general hygiene of cities, dwellings, schools, prisons, etc.; commercial hygiene; ways in which important diseases, such as malaria, typhoid, diphtheria, tuberculosis, pneumonia, influenza, whooping cough, small-pox, measles, scarlet fever, dysentery, cholera, bubonic plague, etc., spread and the means of preventing these epidemics; vaccination against small-pox, hydrophobia, and other diseases; disinfection with special reference to households and schools, quarantines; organization of boards of health in different countries; value of compulsory registration, vital statistics, etc. Elective to properly qualified students. Lectures. *Three times a week.* Third Year.

## INTERNAL MEDICINE AND THERAPEUTICS.

*Woodson Moss, Professor; W. J. Calvert, Assistant Professor.*

1. *Practice of Medicine.* Lectures, recitations, and clinics. Text-books: Anders and Osler. *Three times a week.* Third Year.

2. *Clinical Medicine.* Students in this course are required to make written reports of cases in their charge, and to write articles upon subjects assigned. These articles and reports are discussed by the class and the professor. Monographs and essays upon important subjects, by eminent authors are reviewed before this class, and the students are required to make digests. *Three times a week.* Fourth Year.

3. *Physical Diagnosis.* Pursued during one laboratory period per week throughout the Junior year. The work consists of (1) lectures on auscultation and percussion with practical work on the normal and diseased organs; (2) a study of the several diseases affecting the thoracic viscera, by lectures, demonstrations of organs and charts whenever possible, and by clinics. From time to time the class may visit some of the large State institutions for additional work.

4. *Clinical Pathology.* Pursued during two laboratory periods per week throughout the Junior year. The work consists of lectures and of practical study of sputum, blood, etc., in the laboratory. Each student is provided with a microscope and necessary apparatus. General apparatus and reagents are always at hand. In this course especial attention is given to the application of laboratory methods to diagnostication and their role in the interpretation of the symptom complex of diseases. Practical work in physical diagnosis and clinical pathology is continued during the Senior year.

5. *Therapeutics.* Aside from drugs, therapeutical consideration, such as hydrotherapy, electrotherapy, dietetics, etc., receive due attention. Prescription writing becomes a matter of daily drill. *Twice a week.* Third Year.

## COMPARATIVE MEDICINE.

*John W. Connaway, Professor; John B. Tiffany, Instructor.*

1a. *Comparative Medicine.* Lectures, laboratories and clinics. This course is offered to afford students of human Medicine an opportunity to broaden their knowledge of clinical symptoms and pathological processes. Special attention is given to those diseases of lower animals that are communicable to man. Certain of the non-communicable diseases of the lower animals are considered, where the comparative study is deemed especially important for the better understanding of the corresponding human maladies. The students are made familiar by practical demonstrations with clinical as well as finer methods of diagnosis. They are also instructed in the measures that are employed for eradicating or controlling these sources of infection to man. The library, laboratory, and clinics of the veterinary department are available as aids to this instruction. *Three times a week.* Elective. Third or Fourth Year.

2. An opportunity for advanced and research work will be afforded students who have proper preparation. Elective.

## SURGERY.

*A. W. McAlester, Professor.*

1. *Surgery.* Lectures and recitations, including inflammation, ulceration, septicaemia, etc., bandaging, dislocation and

fracture dressing, and minor operations. In this course the student does much practical laboratory work under the supervision of the instructor. *Three times a week.* Third Year.

2b. *Operative Surgery.* This course includes operations on the cadaver and on the lower animals with instruction in the details of operative preparations, dressings, etc. *Twice a week, Second Semester.* Third Year.

3. *Clinical Surgery.* Lectures on major surgery, with clinics and practical work in the Parker Memorial Hospital. *Three times a week.* Fourth Year.

## OBSTETRICS AND GYNECOLOGY.

*Max W. Myer, Professor.*

1b, 2a. *Obstetrics.* Lectures and clinics. A complete set of abnormal pelvises, Auzoux models of the uterus and contents of the various periods of gestation and charts are employed for demonstration. Each student is required to diagnose presentations, positions, and perform all obstetrical operations on the Schultze-Winkel manikin. The maternity ward of the Hospital offers opportunity for the observation of cases, and besides this ample material is furnished the students in the outdoor clinic, where they are permitted to care for cases, under the supervision of the head of the department. *Three times a week. Second semester, Third Year; first semester, Fourth Year.*

3. *Gynecology.* The lectures with demonstration of museum specimens give the students a general theoretical knowledge of the subject. Bedside clinics are conducted daily. All clinical operations are witnessed by the students. *Twice a week.* Fourth Year.

## DISEASES OF THE EYE, EAR, NOSE AND THROAT.

*Guy L. Noyes, Professor.*

1a. *Diseases of the Eye and Ear.* Lectures and recitations. *Twice a week.* Fourth Year: Texts: May, Buck.

2b. *Diseases of the Nose and Throat.* Lectures and recitations. *Twice a week.* Fourth Year. Texts: Gradle, Kyle.

3. Clinics. *Once a week.* Fourth Year.

(a) Daily conference and drill in diagnosis and treatment at the bedside.

(b) Drill in history taking, presentation of cases, refraction and use of the ophthalmoscope.

### SPECIAL COURSES.

1b. *Medical Jurisprudence.* Once a week. Fourth Year. Professor McAlester.

2b. *Medical Climatology.* Lectures on climate as related to health and disease. Special attention is paid to the climatic conditions prevalent at the various health resorts. Once a week. Fourth Year. Mr. Reeder.

### ENROLLMENT.

107 students were enrolled in the Medical Department during the past year. Their names and addresses are published in the general catalogue of the University.

For further information concerning the Medical Department, address,

A. W. MCALESTER, M. D., Dean,  
Columbia, Mo.



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THE BOARD  
OF THE  
UNIVERSITY OF ILLINOIS

VOL. VIII, No. 10.

OCTOBER, 1907

BULLETIN OF THE UNIVERSITY OF MISSOURI.

# MEDICAL DEPARTMENT

OF THE

UNIVERSITY OF MISSOURI

COLUMBIA, MISSOURI.



ANNOUNCEMENT

1907-8

Published monthly by the University of Missouri. Entered April 12, 1902, at Columbia, Missouri, as second-class matter, under Act of Congress of July 16, 1894.

## CALENDAR.

### Session 1907-8.

- 1907—September 9, Monday ..... Session Begins  
September 9-12 ..... Entrance Examinations  
September 12, Thursday ..... Opening Convocation  
September 13, Friday ..... Class Work Begins  
November 26, Tuesday, at 4 p. m., to  
December 2, Monday, at 8 a. m. .... Thanksgiving Holidays  
December 20, Friday, at 4 p. m., to  
1908—January 2, Thursday, at 8 a. m. .... Christmas Holidays  
January 20-25 ..... Mid-Year Examinations  
January 27, Monday ..... Second Semester Begins  
February 22, Saturday ..... Holiday  
May 25-30 ..... Final Examinations  
June 3, Wednesday ..... Commencement Day




## SPECIAL ANNOUNCEMENT.

Through the splendid generosity of Dr. Pinckney French, the property of the Barnes Medical College of St. Louis has been transferred as a gift to the University of the State of Missouri, to be used for the advancement of medical education in St. Louis.

This property, which is valued at about \$300,000, includes the main College Building and the Centenary Hospital. The College Building (see cut) is a handsome brick structure, with five stories and basement. It includes several large lecture rooms and laboratories well equipped for instruction and research in the various departments of clinical medicine. It also provides quarters for the Barnes Dispensary, with an attendance of about 12,000 patients annually.

The Centenary Hospital, adjoining the main College Building, is a brick building, fire-proof, six stories, and basement, with capacity for more than one hundred patients.

As a result of this acquisition (one of the greatest gifts ever made for medical education), the University of Missouri will be enabled to establish the clinical work of the Medical Department with facilities superior to those of any school in this section of the country. The third and fourth years of the medical course will be moved to St. Louis, beginning in September, 1908; the first two years of the course being retained at Columbia. For the coming year, however, all four years of the course will be given at Columbia as usual.





BARNES MEDICAL COLLEGE AND CENTENARY HOSPITAL  
OF ST. LOUIS

These buildings will be owned and occupied by the Medical Department of the University of Missouri after September 1, 1908.

## MEDICAL FACULTY.

RICHARD HENRY JESSE, LL. D.,

*President of the University.*

ANDREW WALKER McALESTER, A. M., M. D., LL. D.,

*Professor of Surgery, and Dean of the Faculty.*

WOODSON MOSS, M. D., LL. D.,

*Professor of the Practice of Medicine and Therapeutics.*

JOHN WALDO CONNAWAY, D. V. S., M. D.,

*Professor of Comparative Medicine.*

WILLIAM GEORGE BROWN, B. S., Ph. D.,

*Professor of Chemistry.*

GEORGE LEFEVRE, A. B., Ph. D.,

*Professor of Zoology.*

CHARLES WILSON GREENE, A. M., Ph. D.,

*Professor of Physiology and Pharmacology.*

CLARENCE MARTIN JACKSON, B. S., M. S., M. D.,

*Professor of Anatomy and Histology, and Junior Dean of the Faculty.*

WALTER McNAB MILLER, B. S., M. D.,

*Professor of Pathology and Bacteriology.*

GUY L. NOYES, M. D.,

*Professor of Diseases of the Eye and Ear, and Superintendent of the Parker Memorial Hospital.*

MAX W. MYER, A. B., M. D.,

*Professor of Gynecology and Obstetrics.*

SIDNEY CALVERT, B. Sc., A. M.,

*Professor of Organic Chemistry.*

WILLIAM JEPHTHA CALVERT, A. B., M. D.,

*Assistant Professor of Internal Medicine.*

ROBERT B. GIBSON, Ph. D.,

*Assistant Professor of Physiological Chemistry and Pharmacology.*

HERMANN SCHLUNDT, M. S., Ph. D.,

*Assistant Professor of Physical Chemistry.*

FRANK GOSNEY NIFONG, M. D.,

*Assistant Professor of Genito-Urinary Surgery, and Assistant to the Chair of Surgery.*

ELEXIOUS THOMPSON BELL, B. S., M. D.,  
*Assistant Professor of Anatomy.*

CAROLINE MCGILL, A. B., A. M.,  
*Instructor in Anatomy.*

WILLIAM HENRY SCHULTZ, Ph. B., Ph. D.,  
*Instructor in Physiology.*

EDWIN HENRY SCHORER, S. B., M. D.,  
*Instructor in Pathology and Bacteriology.*

\*GEORGE REEDER, of the U. S. W. B.,  
*Lecturer on Climatology.*

EDNA D. DAY, B. S., M. S., Ph. D.,  
*Lecturer on Dietetics.*

†  
*Lecturer on Pediatrics.*

†  
*Lecturer on Nervous Diseases.*

†  
*Lecturer on Dermatology and Electrotherapeutics.*

ERNEST EARL MORLAN, A. B., A. M.,  
*Assistant in Chemistry.*

GEORGE WASHINGTON TANNREUTHER, A. B., A. M.,  
*Assistant in Zoology.*

JOSEPH S. SUMMERS, A. B., A. M.,  
*Analyst in Physiology.*

WALTER EDWARD DANDY,  
*Student Assistant in Anatomy.*

LAKE BREWER, A. B.,  
*Student Assistant in Physiology.*

MARION SYLVESTER DOOLEY,  
*Student Assistant in Physiology.*

ALBERT HOWARD BAUGHER,  
*Student Assistant in Physiology.*

OLIVER WENDELL HOLMES MITCHELL,  
*Student Assistant in Pathology.*

\*In the service of the U. S. Government.

†To be appointed.

## THE UNIVERSITY OF MISSOURI.

The University of Missouri is located at Columbia, a beautiful city of about 10,000 inhabitants, on the Wabash and the Missouri, Kansas and Texas railroads. It is the oldest State University west of the Mississippi, having been founded in 1839. It includes the following Departments: (1) College of Arts and Science; (2) Teachers College; (3) College of Agriculture and Mechanic Arts, and Experiment Station; (4) School of Mines (at Rolla, Mo.); (5) Law Department; (6) Medical Department; (7) Engineering Department; (8) Graduate Department; (9) Department of Journalism. The total enrolment for the session 1906-7 was 2292.

### INCOME.

The income of the University of Missouri, from the State and the United States Government, is about \$500,000 a year. As an integral part of the University, the Medical Department is supported from this income. As a result, a most thorough course of instruction, with the highest standards of scholarship, has been established and maintained. It cannot be too strongly emphasized that this is impossible in a medical school which depends solely upon students' fees for support. Modern medical education is the most costly in the world, and cannot be properly given without generous support from public or private endowment.

### BUILDINGS AND EQUIPMENT.

The University occupies (in addition to the buildings of the Barnes Medical College recently acquired) thirty-three buildings, a birds-eye view of which is given on another page. Several of these buildings are utilized, entirely or in part, for the Medical Department. The various scientific laboratories and museums are well-equipped, and afford valuable opportunity for study in sciences collateral to Medicine.

Athletics, debating, and other phases of student activity in the University form another important addition to the educational facilities usually provided by an isolated medical school. The combined course offered in Medicine and in Arts and Science will be discussed later.



## FREE TUITION.

On account of free tuition and low cost of living, the University is able to offer the highest quality of instruction in the various Departments at a cost lower than that in any other institution of similar rank in the United States. All Departments are open alike to men and to women. The large University catalogue describing in detail the work of the various departments will be mailed to any address upon application to the University Publisher, Columbia, Missouri.

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## MEDICAL DEPARTMENT.

### HISTORICAL.

The "McDowell Medical College," founded in St. Louis in 1840, was the first medical school established west of the Mississippi river. In 1845, this school became the Medical Department of the University of Missouri. Shortly before the Civil War, however, it was discontinued, but was re-established in Columbia in December, 1872.

### POLICY.

The Medical Department has always stood for the highest standards of medical education, and was a pioneer in introducing and developing the laboratory method. Laboratory work in Anatomy, Chemistry, and Microscopy was required of students from the date of re-establishment in 1872. A few years later, laboratory work in Pathology and in Physiology was added, and in 1891 the laboratories of Histology and Bacteriology were established. The Medical Department of the University of Missouri was also one of the first schools to establish these fundamental medical sciences on a University basis, by placing them in charge of specialists who are not allowed to practice medicine, but devote their time exclusively to teaching and investigation.

### REQUIREMENTS FOR ADMISSION.

The University of Missouri has always stood firmly for a high standard of preliminary education for medical students. It was among the first schools to require the completion of a High School course, and was later one of the first to require in addition the completion of one year of college work before admission to the Medical Department. It is now widely recognized that a High School course alone is insufficient training in preparation for the difficult



work in the modern medical curriculum. While for the present only one year of college work is required, it is strongly recommended that two years' college work preparatory to Medicine be taken, as outlined under the Combined Course.

The entrance requirements for the regular four years' course in Medicine include: (a) The completion of an approved four years' High School course; or the equivalent of 15 units work, of which at least 3 units must be in English, 1 in Algebra, 1 in Plane Geometry, and 2 in foreign language. The remaining 8 units may be chosen from the following list of subjects: English, Algebra, Geometry, Trigonometry, History, Civil Government, Latin, Greek, German, French, Spanish, Physics, Chemistry, General Biology, Zoology, Botany, Drawing, Physiography, Physiology. A detailed description of the work required for credit in each of these subjects is given on pp. 57-65 of the General Catalogue of the University.

(b) One year of college work as follows: English, 6 hours; German, 6 hours; General Zoology, 6 hours; General Physics, 6 hours; Inorganic Chemistry, 6 hours. Equivalent work in foreign language may be substituted for the English and German. A student who lacks a part of the college work required for entrance may be admitted to the Department of Medicine upon condition that he register for this work in the College of Arts and Science. He may then take in addition such of the first year's work in Medicine as does not conflict with the work required for entrance.

The requirements for admission to the Combined Course in Medicine and in Arts and Science are those outlined under (a). A student who has completed (a), but not the college work required for admission to the four years' Medical course, may therefore get this required college work by taking the first year of the Combined Course.

### SPECIAL STUDENTS.

Students who are not candidates for the degree may be admitted to the Medical Department without passing the regular examinations required for entrance, under the following conditions:

(1) They must be at least 21 years of age; (2) They must show good reasons for not taking a regular course; (3) They must pass such examinations or other tests as shall demonstrate fitness to pursue profitably the subjects selected by them; (4) They will be allowed to take work in not more than two subjects, with such kindred work as the professor in charge of the major subjects may suggest. Such students are expected to do specially good work in the subjects which they choose. If at any period of the session the work becomes unsatisfactory in one or both of the major subjects, their connection with the University shall be severed by the

Dean of the Department. Entrance cards for special students are issued by the Dean, and approved by the professors of the major subjects.

### ADVANCED STANDING.

Every applicant for advanced standing is required to present credentials from an accredited college showing satisfactory completion of courses equivalent to those for which he seeks credit. Moreover, the usual entrance requirements to the first year class must be satisfied, and evidence of a good moral character must be presented to the Dean of the Medical Department.

### FEES AND EXPENSES.

The University of Missouri offers a thorough medical education at a cost lower than that at any other first class medical school in the country. The total necessary expenses are less than \$200 a year. Tuition is free to all students. The only fees required are a library fee of \$10 a year, and laboratory fees amounting to about \$40 a year in the first and second years, and \$10 in the third and fourth years. When the clinical work is transferred to St. Louis, beginning in September, 1908, a tuition fee will be charged in the third and fourth years.

*Every student who applies for admission to the University after the first week of the semester in which he seeks admission shall pay a fee of \$5 for late registration, in addition to the fees already provided for. No student shall receive credit who enters later than October 15.*

The two Dormitories for men, Benton Hall and Lathrop Hall, lodge 140 students. Meals are furnished by the University Boarding Club, in Lathrop Hall. Its capacity reaches 400. The cost of table board in this Boarding Club has not exceeded \$2.00 a week. The cost of room rent, board, lights, and laundry to a student living in a dormitory, and taking his meals in the University Boarding Clubs does not exceed \$3 a week. Board and lodging may also be obtained in private families at from \$3 to \$5 a week.

Applications for rooms in Benton Hall or Lathrop Hall should be made promptly to the "Secretary of the University," for all rooms in these halls are always engaged before the opening of the session, and rooms are allotted to applicants in the order of their applications. In order to reserve a room, it is necessary to make a deposit of \$5, which is credited on the room rent when paid.

Books and stationery are supplied at low rates by the students' Co-operative Store, and may be estimated at \$25 a year.

Many medical students support themselves wholly or in part by work of various kinds. The Young Men's Christian Association of

the University, which will have quarters in the new Student Building erected at a cost of \$50,000, has an employment bureau which renders to those desiring it valuable assistance in finding work.

## BUILDINGS AND EQUIPMENT.

### 1. Medical Laboratory Building.

This is a new stone and brick building (see cut), 48x150 feet, three stories high, with a special system of steam heating and forced ventilation. It was specially designed for the Medical Laboratories, and is splendidly equipped to meet the needs of modern laboratory instruction and research. The following is a brief list of the various rooms and equipment in this building.

The department of Anatomy and Histology occupies (1) a large dissecting room, well lighted and ventilated, with dissecting tables, students' lockers, display cases for specimens, models, etc.; (2) an advanced anatomical laboratory, specially equipped for the study of Topographic Anatomy, including serial sections through formalin-hardened bodies; histological laboratory (with preparation and store-room in connection), thoroughly equipped with lockers, tables, microscopes, microtomes, and other apparatus for instruction and research in microscopic work; (4) lecture room for Anatomy and Histology, equipped with Auzoux manikin, projection apparatus, charts, etc.; (5) Museum room, containing a large number of models and specimens in human anatomy; (6) professor's office and research laboratory; (7) embalming and cold storage rooms, with an abundance of well-preserved cadavers for the work in dissection.

The department of Physiology, Physiological Chemistry, and Pharmacology occupies the following rooms: (1) A large laboratory (with adjoining store-room) equipped with tables, lockers, and sets of apparatus for the students in Physiology and Pharmacology; (2) a blood-pressure room, particularly for mammalian experiments; (3) a research laboratory, thoroughly equipped, for advanced students in Physiology and Pharmacology; (4) professor's office, with adjacent research laboratory; (5) professor's office and research laboratory in Physiological Chemistry; (6) large students' laboratory, with adjacent store-room, thoroughly equipped for work in Physiological Chemistry; (7) animal room; (8) mechanic's shop; (9) lecture room (in common with Pathology).

The department of Pathology and Bacteriology occupies (1) a large students' laboratory for Bacteriology and Pathological Histology, well equipped with lockers, microscopes with oil immersion lenses, etc.; (2) a preparation room for Bacteriology, with sterilizers; incubators, etc.; (3) professor's office, with adjacent private laboratory splendidly equipped for research work in Pathology; (4)

large room for autopsies and work in gross Pathology, including a collection of pathological specimens in glass cases; (5) an animal room and store-room; (6) office and research laboratory for Bacteriology; (7) lecture-room (in common with Physiology).

Three clinical laboratories are also located in the Medical Laboratory building, viz.: (1) Students' laboratory in Clinical Microscopy, with complete equipment of microscopes, centrifuge, haemocytometers, and other apparatus used in clinical diagnosis; (2) research laboratory well equipped for investigation in Internal Medicine; (3) students' laboratory for work in operative surgery on the cadaver.

#### MEDICAL LIBRARY.

No Medical school of to-day can be considered well equipped without a good library. The Medical library is placed in a room on the upper floor of the Medical Laboratory building, and is open six hours daily, except Sunday. It contains about 2,200 bound volumes, and a large number of pamphlets. The principal medical works of reference are included, and the leading medical periodicals of the world (about 50 in number) are received regularly and placed on file. The main University Library also contains many works of interest and value relating to the medical sciences.

#### ANIMAL HOUSE.

An appropriation was made by the last general assembly for an animal house for the Medical Laboratories. Plans for this building are now being drawn, and it will be constructed near the Medical Laboratory Building during the present year.

#### 2. Chemistry Building.

The Chemistry Building (see cut) is a large brick building, two stories and basement, located on the University Campus and used in common by the Medical Department and other Departments of the University. It contains several large laboratories and lecture rooms, with many smaller rooms for various purposes. The building is thoroughly equipped with facilities for instruction and investigation in Inorganic, Organic and Physical Chemistry, including Qualitative and Quantitative Analysis.

#### 3. Museum Building.

The Museum Building (see cut) is also a large brick building on the University Campus and devoted primarily to Zoology and Geology. In the department of Zoology, the Medical students receive instruction in Embryology, a large well equipped laboratory, with lecture room, museum, etc., being available for this purpose. Courses in Comparative Anatomy, Cytology, etc., are also elective to Medical

students. A course in Dietetics, required of third year Medical students, is also given in this building, in the lecture room and laboratory of the department of Home Economics.

4. Other Buildings.

In several other buildings on the University campus instruction is offered in many lines open to Medical students as electives, and of especial service to those taking the Combined Course in Medicine and in Arts and Science. The Gymnasium and Athletic grounds are open for the use of all students. The recently-acquired buildings of the Barnes Medical College, in St. Louis, to be used for the clinical work, beginning with September, 1908, have already been described.

THE PARKER MEMORIAL HOSPITAL.

Clinical Staff.

ANDREW WALKER McALESTER, M. D. ....	Surgeon
FRANK G. NIFONG, M. D. ....	Surgeon
WOODSON MOSS, M. D. ....	Physician
WILLIAM J. CALVERT, M. D. ....	Physician
GUY L. NOYES, M. D. ....	Ophthalmologist and Otologist
MAX W. MYER, M. D. ....	Gynecologist and Obstetrician
AUGUST W. KAMPSCHMIDT, M. D. ....	Anesthetist
WALTER McNAB MILLER, M. D. ....	Pathologist

Officers.

GUY L. NOYES, M. D. ....	Superintendent
HARRY S. MARSH ....	Intern
JOSEPH S. SUMMERS, A. M. ....	Intern
JOSEPHINE SHIELDS	

Head Nurse and Principal of Training School for Nurses	
DORA BATTSON .....	Assistant Head Nurse

By the gift of Wm. L. Parker, the Department of Medicine is supplied with an excellent Hospital, which has now been in operation for five years. In the words of the donor, it is "for the benefit of the Medical Department." This building (see cut) is a handsome, modern structure conveniently located on high ground at the west side of the Campus. The building is heated by steam, lighted by gas and electricity, and well ventilated. The Hospital has beds and accommodations for about 45 patients. It is supplied with a modern equipment in the Medical and Surgical appliances which contribute to the comfort and welfare of the patients.

The Parker Memorial Hospital is a State Hospital, owned and controlled by the University, and is open to the sick of Missouri for the treatment of accidents, of acute and subacute diseases, and



of chronic curable diseases. Cases of contagious diseases are not admitted.

The primary purpose of the Hospital is to furnish clinical instruction to the students of the Department of Medicine, in order that by the observation and study of disease they may be fitted to practice medicine intelligently. The patients serve to illustrate the nature of disease, its course, and its treatment. In the use of patients in this way nothing is done to offend their sensibilities, and their interest and welfare are constantly and carefully regarded by those in charge of the Hospital.

The rates for clinical patients are \$7.00 a week for the general wards; or \$15.00 a week for single room. These charges include medical and surgical attendance, board and ordinary nursing and medicines. A limited number of private cases is also received at a rate of \$15.00 a week, in addition to a fee for the physician.

#### THE BUSCH CLINICAL AMPHITHEATRE.

A Clinical Amphitheatre adjoining the Hospital has been provided by the gift of Adolphus Busch, of St. Louis. It has a seating capacity of about one hundred, is supplied with accessory rooms for sterilizing, anaesthetizing, etc., and has a number of special rooms for the work in dispensary clinics. The interior of the Amphitheatre has recently been equipped with the various medical and surgical accessories of modern clinics.

Out-patient clinics are established in Eye, Ear, Nose, and Throat; in Internal Medicine; in Surgery; and in Obstetrics and Gynecology. Students have opportunity for observing and treating patients in these clinics, as well as in the wards of the Hospital. The classes, in small sections, work always under the direction and criticism of the Instructor in charge.

#### THE TRAINING SCHOOL FOR NURSES.

The University maintains a Training School for Nurses in connection with the Department of Medicine. A three-year course of theoretical and practical instruction is offered and on the completion of the course the candidate is awarded a Certificate of Graduation.

Being connected with the University and having the facilities of our scientific laboratories and of the Parker Memorial Hospital gives to those in training superior advantages, and produces nurses thoroughly competent in the theory and practice of nursing in all its details.

#### SCHOLARSHIP.

The Rollins Scholarship in the Department of Medicine is a prize of fifty dollars, which is awarded to that member of the Junior (Third Year) class who has made the best record during the course.





### CHEMISTRY BUILDING

Used by students in the Medical Department



### MUSEUM BUILDING

In this building Medical students receive instruction in Biology and related subjects



# MEDICAL LABORATORY BUILDING

Erected for the Medical Department at a cost of \$35,000



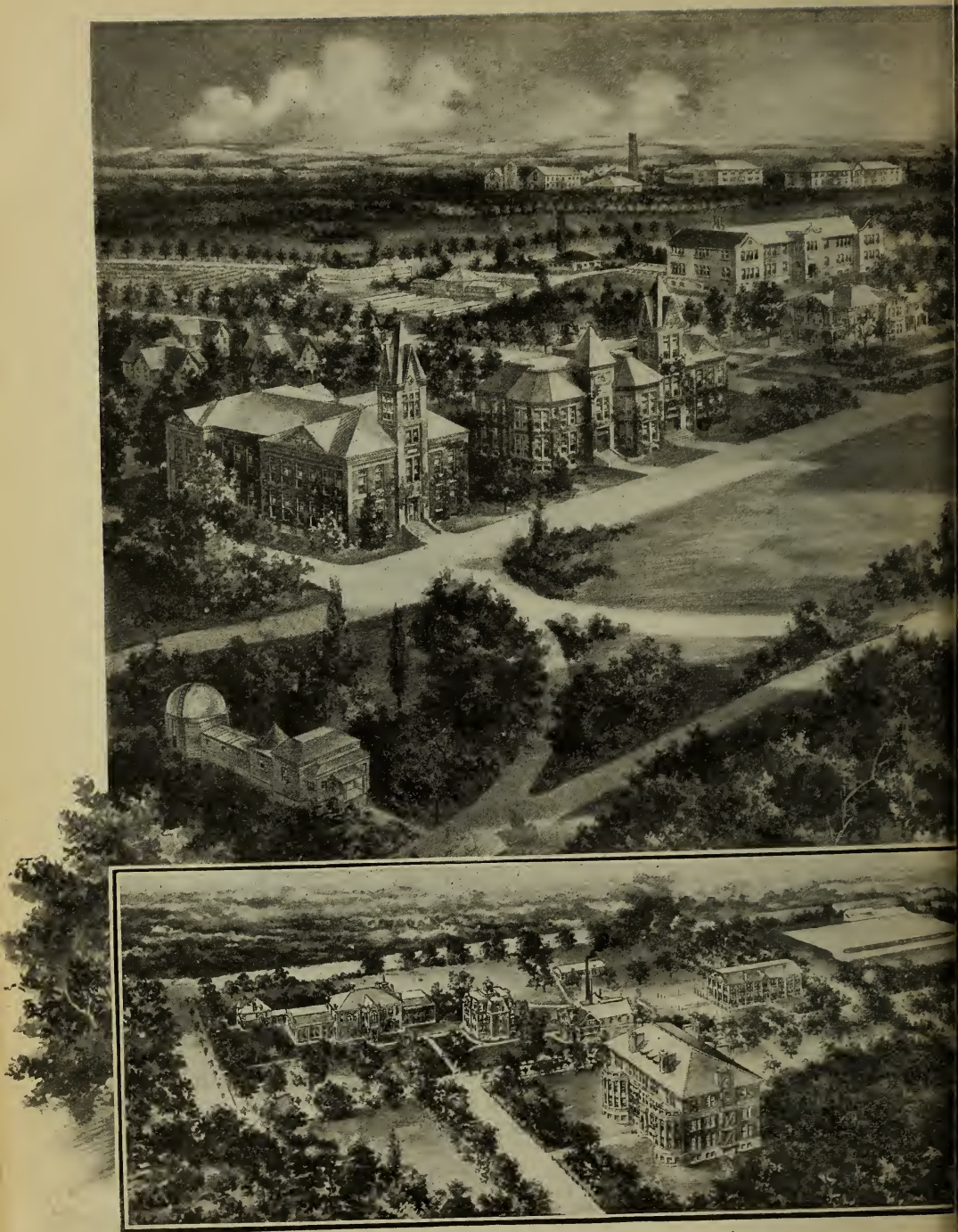
# PARKER MEMORIAL HOSPITAL

In which clinical instruction is given to Medical students

# COURSE OF INSTRUCTION (Four Years' Course).

Subject	Character of Course	Semester Credits		Total Hours	
		I	II	Lecture	Laboratory or Clinics
FIRST YEAR					
Osteology . . . . .	3 hrs. recitation a week . . . . .	3	—	48	—
Neurology . . . . .	1 lecture, 5 hrs. laboratory a week . . . . .	—	3	16	80
Dissection . . . . .	7½ hrs. laboratory a week . . . . .	3	3	—	240
Normal Histology . . . . .	1 lecture, 7½ hrs. laboratory a week . . . . .	4	4	32	240
Organic Chemistry . . . . .	2 lectures, 2½ hrs. laboratory a week . . . . .	3	3	64	80
Embryology . . . . .	1 lecture, 5 hrs. laboratory a week . . . . .	—	3	16	80
Bacteriology . . . . .	7½ hrs. laboratory a week . . . . .	3	—	—	120
Total . . . . .		16	16	176	840
SECOND YEAR					
Advanced Dissection	7½ hrs. laboratory a week . . . . .	3	—	—	120
Topographic Anatomy . . . . .	7½ hrs. laboratory a week . . . . .	—	3	—	120
Physiology and Physiological Chemistry	5 lectures, 12½ hrs. laboratory a week . . . . .	10	—	80	200
Pharmacology . . . . .	2 lectures, 5 hrs. laboratory a week . . . . .	—	4	32	80
General Pathology . . . . .	3 lectures, 2½ hrs. laboratory a week . . . . .	4	—	48	40
Special Pathology . . . . .	4 lectures, 10 hrs. laboratory a week . . . . .	—	8	64	160
Hygiene . . . . .	3 lectures a week . . . . .	—	3	48	—
Total . . . . .		17	18	272	720





**BIRD'S-EYE VIEW OF THE**





RSITY OF MISSOURI

# COURSE OF INSTRUCTION—Continued.

Subject	Character of Course	Semester Credits		Total Hours	
		I	II	Lecture	Laboratory or Clinics
THIRD YEAR					
Practice of Medicine	3 lectures, 6 hrs. clinics a week..	4	4	96	192
Therapeutics . . . .	2 lectures a week . . . . .	2	2	64	—
Physical Diagnosis and Clinical Path- ology.....	7½ hrs. laboratory a week.....	3	3	—	240
Surgery (inc. Princi- ples of Surgery, Mi- nor Surgery and op- erative Surgery on Cadaver).....	3 lectures, 6 hrs. clinics or labora- tory a week.....	4	4	96	192
Genito-Urinary Dis- eases. . . . .	1 lecture a week, with additional clinics . . . . .	1	1	32	*
Obstetrics.....	3 lectures a week, with additional clinics . . . . .	—	3	48	*
Nervous and Mental Diseases.....	1 lecture a week, with additional clinics . . . . .	1	1	36	*
Pediatrics . . . . .	1 lecture a week, with additional clinics.....	1	1	32	*
Dermatology and El- ectrotherapeutics ..	1 lecture a week, with additional clinics . . . . .	1	1	32	*
Dietetics. . . . .	3 hrs. lecture and laboratory dem- onstrations.....	3	—	48	—
Total .. . . .		20	20	484	624*

\*Plus additional clinics variable in amount.



# COURSE OF INSTRUCTION—Continued.

Subject	Character of Course	Semester Credits		Total Hours	
		I	II	Lecture	Laboratory or Clinics.
	FOURTH YEAR				
Practice of Medicine (including Clinical Microscopy) . .	3 lectures, 6 hrs. clinics a week..	4	4	96	192
Surgery.. . . . .	3 lectures, 6 hrs. clinics a week..	4	4	96	192
Obstetrics . . . . .	3 lectures a week, with additional clinics . . . . .	3	—	48	*
Gynecology. . . .	2 lectures, 3 hrs. clinics a week..	3	3	64	96
Nervous Diseases...	1 lecture a week, with additional clinics . . . . .	1	1	32	*
Pediatrics . . . . .	1 lecture a week, with additional clinics . . . . .	1	1	32	*
Dermatology and Electrotherapeutics	1 lecture a week, with additional clinics . . . . .	1	1	32	*
Eye, Ear, Nose and Throat . . . . .	2 lectures, 5½ hrs. clinics a week . . . . .	4	4	64	176
Climatology.....	1 lecture a week . . . . .	—	1	16	—
Medical Jurispru- dence.....	1 lecture a week . . . . .	—	1	16	—
	Total . . . . .	21	20	496	656
	Total four years . . . . .	74	74	1428	2840

\*Plus additional clinics variable in amount.

## COURSE IN MEDICINE AND IN ARTS AND SCIENCE.

It is the policy of the Department of Medicine to encourage in every way possible the gaining of a liberal education as a sound preparation for the professional study of Medicine.

Students of Medicine are strongly urged to take a general scientific course in conjunction with their work in Medicine. The student in the Department of Medicine may, by a proper choice of electives in the College of Arts and Science, do his required work in Medicine, and at the same time meet the requirements for the degree of Bachelor of Arts (see course below). This, it is true, prolongs the course to at least five years, but the greater power and broader training acquired makes a better and more successful physician. Such students are registered in both the Department of Medicine and in the College of Arts and Science, and must fill the requirements of both. Candidates for both the A. B. and M. D. degrees are recommended to elect subjects required or which lead up to subjects required in Medicine, in approximately the order suggested by the following tabulated statement. With the exception of Physical Training or Military Science, the work outlined for the First Year is identical with the college work required for admission to the regular course in Medicine.

The entrance requirements for the combined course outlined below is that specified for the College of Arts and Science, i. e., a high school course equivalent to fifteen units. A student who follows this course will, at the end of four years, have completed the requirements for the A. B. degree (provided that six hours of the electives be chosen from work "for undergraduates and graduates" in the Biological Group). He will also have completed the first two years of the course in Medicine, and will require only two years more for the M. D. degree. All students who contemplate taking this course should consult the Committee on Combined Course (at present Professor Jackson).

### COMBINED COURSE LEADING TO THE DEGREES OF A. B. AND M. D. RECOMMENDED BY THE MEDICAL FACULTY.

FIRST YEAR.	1st Sem.	2d Sem.
	Hrs. Credit.	Hrs. Credit.
English .....	3	3
General Zoology .....	3	3
Chemistry, Inorganic ....	4	4
General Physics ....	3	3
German .....	3	3
Physical Training or Military Science.	1	1
	<hr/> 17	<hr/> 17

SECOND YEAR.	1st Sem. Hrs. Credit.	2d Sem. Hrs. Credit
Chemistry, Organic .....	3	3
History .....	3	3
Ancient Language .....	3	3
Psychology .....	3	3
Physical Training or Military Science ..	1	1
Elective .....	4	4
	<hr/> 17	<hr/> 17

THIRD YEAR.		
Osteology .....	3	0
Neurology .....	0	3
Practical Anatomy .....	3	3
Normal Histology .....	4	4
Embryology (Zoology 4b) .....	0	3
Bacteriology .....	3	0
Elective .....	4	4
	<hr/> 17	<hr/> 17

FOURTH YEAR.		
Physiology and Physiological Chemistry	10	0
Pharmacology .....	0	4
Pathology, General and Special ..	4	8
Hygiene .....	0	3
Advanced Dissection .....	3	0
Topographic Anatomy .....	0	3
	<hr/> 17	<hr/> 18

#### FIFTH YEAR.

Same as the Third Year of Medicine in the Four Years' Course.

#### SIXTH YEAR.

Same as the Fourth Year of Medicine in the Four Years' Course.

With the consent of the Dean, Medical students may take accessory work offered in other Departments of the University.

#### COURSES IN DETAIL.

(Courses designated by a number with the letter a attached, thus: 4a, are given the first semester only. Those designated by a number with the letter b attached, thus: 4b, are given the second semester only. Those designated merely by a number are continuous courses and are given both semesters.)

## **Anatomy and Histology.**

Professor JACKSON; Assistant Professor BELL; Miss MCGILL;  
Mr. JOHNSON.

2a. **Osteology.** Recitations and Demonstrations. A complete disarticulated human skeleton is issued to every two students for use during this course. T. Th. S., at 8. *First Year.*

3. **Normal Histology.** A study of the microscopic anatomy of the body. Each student prepares, stains, and mounts permanently about 100 specimens for study. Lecture, M., at 10; Laboratory, Th. S., 8-1. *First Year.*

4. **Dissection.** The upper and lower extremities are dissected in the first semester; the thorax and abdomen in the second. Laboratory, M. W. F., 2-4:30. *First Year.*

5b. **Neurology.** A study of the central nervous system and sense organs. Laboratory, with one lecture a week. M. W. F., 8-10. *First Year.*

6a. **Advanced Dissection.** Dissection of the head and neck. Laboratory, M. W. F., 2-4:30. *Second Year.*

7b. **Topographic Anatomy.** A study of the topography of the various organs by means of serial sections through the entire body. Laboratory, M. W. F., 2-4:30. *Second Year.*

8b. **Advanced Human Embryology.** *One lecture and two laboratory periods a week.* Elective.

9. **Advanced Anatomy.** Advanced work in Anatomy or Histology, the character of which may be varied to suit individual needs. Hours to be arranged. Elective.

10. **Research.** Opportunity is afforded to a limited number of properly qualified students for original investigation in Anatomy or Histology. Hours to be arranged. Elective.

## **Physiology and Pharmacology.**

Professor GREENE; Assistant Professor GIBSON; Dr. SCHULTZ;  
Mr. DOOLEY; Mr. BAUGHER.

2a. **Experimental Physiology.** The physiology and physiological chemistry of the blood, secretion, digestion, nutrition, and excretion. *Four times a week.* Lectures, T. Th., at 8; Laboratory, T. Th., 9-11:30. Assistant Professor GIBSON; Mr. BAUGHER.

3a. **Experimental Physiology.** The physiology of muscle, circulation, respiration, nervous system, and sense organs. *Six times a week.* Lectures, M. W. F., at 8; Laboratory, M. W. F., 9-11:30. Professor GREENE; Dr. SCHULTZ; Mr. DOOLEY.

4b. **Physiological Chemistry.** The chemistry of animal tissues and fluids, and metabolism of foods. Elective. *Three times a week.* Assistant Professor GIBSON.

5b. **Pharmacology.** This course presents the physiological action of chemicals. The laboratory tests are arranged by groups so that students may observe the results of a wide range of experiments. Texts: Cushny's Sollmann's Pharmacology; Wood's Therapeutics. *Four times a week.* Open to students who have had course 3b. Lectures, T. Th., at 8; Laboratory, T. Th., 1:30-4. Professor GREENE; Dr. SCHULZ.

6. **Advanced Physiology.** Elective. Hours to be arranged.

8. **Investigation.** Elective. Hours to be arranged.

### **Pathology, Bacteriology and Hygiene.**

Professor MILLER; Dr. SCHORER; Mr. MITCHELL.

1a. **Bacteriology: Introductory and General.** Being essentially a pure science course and intended to give the student a comprehensive view of the whole field of Bacteriology, independent of any particular professional application, special attention is given to the technique of the science. The student prepares media, separates and makes pure cultures, sterilizes, incubates, disinfects, and prepares and studies microscopic preparations. The knowledge and practice obtained in this course prepare the student for the further study of the subject as a pure science or of the practical applications of its methods in the study of domestic and municipal hygiene, in agriculture, dairying, brewing, and other industries, in household economics, sanitary engineering, and in veterinary and human medicine. Elective to students who have made the necessary preparation in chemistry, physics, and biology. Lectures and laboratory. *Three times a week.* First Year. Laboratory deposit, ten dollars.

2. **Pathology, General and Special.** The conduct of the necropsy, macroscopic, microscopic, bacteriologic, experimental writing of protocol. This work includes the study of degeneration, regeneration, inflammation, the effects of poisons, the infections, animal parasites, and tumors. In the study of infections is included the growth of the infectious organisms in pure culture, their examination and the study of their effect upon rabbits, guinea pigs, mice, and other small domestic animals. While the work centers about the post-mortem examination, the radius of operation extends into the field of experimental pathology and is rounded out by the study of preserved material derived from former necropsies or obtained elsewhere. When the work of the student is not directed to the post-mortem examination or demonstration of gross material, about five microscopic sections are given daily to the student for staining, mounting, and study. These preparations have a permanent value and become the property of the student. Lectures and laboratory.



*Four times a week; three lectures and one laboratory period, first semester. Eight times a week; four lectures and four laboratory periods second semester.* Second Year. Laboratory deposit for first semester, five dollars; second semester, ten dollars.

5. **Bacteriology, Research Work.** A limited number of properly qualified students are admitted to the laboratory for work of this kind. The results of such work must be submitted in writing and be of such nature as may be approved for publication.

6. **Pathology, Research Work.** Explanation as given under course 5.

7b. **Hygiene.** Lectures with demonstrations on the following subjects: History of Hygiene; hygienic conditions of air and soil, with special reference to the influence of climate (acclimatization) upon diseases; general hygiene of cities, dwellings, schools, prisons, etc.; commercial hygiene; ways in which important diseases, such as malaria, typhoid, diphtheria, tuberculosis, pneumonia, influenza, whooping cough, small-pox, measles, scarlet fever, dysentery, cholera, bubonic plague, etc., spread, and the means of preventing these epidemics; vaccination against small-pox, hydrophobia, and other diseases; disinfection with special reference to households and schools; quarantines; organization of boards of health in different countries; value of compulsory registration, vital statistics, etc. Elective to properly qualified students. Lectures. *Three times a week.* Second Year.

### Chemistry.

Professor BROWN; Professor CALVERT; Professor SCHLUNDT.

11. **Organic Chemistry.** The aim of this course is to give a general survey of the principal classes of organic compounds, such as hydrocarbons, alcohols, phenols, ethers, aldehydes, acids, esters, fats, carbohydrates, etc. In so far as it is possible, the student prepares in the laboratory representatives of the various classes of compounds and studies their reactions. Lectures and Laboratory. Lecture, F., 10; Laboratory, T. Th., 1:30-4. Professor CALVERT.

For other courses in Chemistry which are given in the College of Arts and Science and which may be elected, see General Catalogue of the University.

### Zoology.

Professor LEFEVRE; Mr. TANNREUTHER.

4b. **Embryology of Vertebrates.** The course is designed to lay the foundation of vertebrate embryology. In the laboratory the development of the chick and pig is carefully studied from preparations of entire embryos and from sections, representing successive



stages of development. These observations are used as a basis of comparison for the study of human embryology. Such questions as ovulation, menstruation, relation of the embryo to the uterus, and the mechanism of nutrition of the embryo, receive special attention. Lectures and Laboratory, M. W. F., 11 to 1.

**Electives.** Courses in Comparative Anatomy of Vertebrates and Cytology may be elected by students in the Department of Medicine who are prepared to pursue them. See announcement of the College of Arts and Science.

### **Comparative Medicine.**

Professor CONNAWAY.

1a. **Comparative Medicine.** Lectures, laboratories, and clinics. This course is offered to afford students of human Medicine an opportunity to broaden their knowledge of clinical symptoms and pathological processes. Special attention is given to those diseases of lower animals that are communicable to man. Certain of the non-communicable diseases of the lower animals are considered, where the comparative study is deemed important for the better understanding of the corresponding human maladies. The students are made familiar by practical demonstrations with clinical as well as finer methods of diagnosis. They are also instructed in the measures that are employed for eradicating or controlling these sources of infection to man. The library, laboratory, and clinics of the Veterinary Department are available as aids to this instruction. *Twice a week.* Elective. Third or Fourth Year.

2. An opportunity for advanced and research work will be afforded students who have proper preparation. Elective.

### **Internal Medicine and Therapeutics.**

Professor MOSS; Assistant Professor CALVERT.

1. **Practice of Medicine.** Lectures and recitations. Texts: Anders, and Osler. *Three times a week.* Third and Fourth Years. Professor MOSS.

2. **Clinical Medicine.** Clinics are held six hours a week in the Dispensary and in the wards of the Parker Memorial Hospital. Students in this course are required to make written reports of cases in their charge, and to write articles upon subjects assigned. These articles and reports are discussed by the class and the Professor. Third and Fourth Years. Professor MOSS and Assistant Professor CALVERT.

3. **Clinical Pathology.** Pursued during two laboratory periods a week throughout the Third Year. The work consists of lectures and practical study of sputum, blood, etc., in the laboratory. Each student is provided with a microscope and necessary apparatus.

General apparatus and reagents are always at hand. In this course especial attention is given to the application of laboratory methods to diagnostication and their role in the interpretation of the symptom complex of diseases. T. Th., 2-4:30. Assistant Professor CALVERT.

4. **Clinical Pathology.** Pursued during one laboratory period a week throughout the Fourth Year. Assistant Professor CALVERT.

5. **Therapeutics.** Aside from drugs, therapeutical consideration, such as hydrotherapy, electrotherapy, dietetics, etc., receive due attention. Prescription writing becomes a matter of daily drill. W. F., at 2. Third Year. Professor MOSS.

6. **Physical Diagnosis.** Pursued during one laboratory period a week throughout the Third Year. The work consists of (1) lectures on auscultation with practical work on the normal and diseased organs; (2) a study of the several diseases affecting the thoracic viscera, by lectures, demonstrations of organs and charts whenever possible, and by clinics. From time to time the class may visit some of the large State institutions for additional work. S., 2-4:30. Assistant Professor CALVERT.

**Elective.** A limited number of students prepared to do advanced work may be assigned to special problems during the Second semester of the Third and throughout the Fourth Year. A credit may be given.

### **Surgery.**

Professor McALESTER; Assistant Professor NIFONG.

1. **Principles of Surgery.** Lectures and recitations, including inflammation, ulceration, septicaemia, etc., bandaging, dislocation and fracture dressing, major and minor operations. *Three times a week.* Third and Fourth Years.

2b. **Operative Surgery.** This course includes operations on the cadaver and on the lower animals, with instruction in the details of operative preparations, dressings, etc. *Twice a week, Second Semester.* Third Year.

3. **Clinical Surgery.** Clinics are held daily in the Dispensary and the wards of the Parker Memorial Hospital. Juniors and Seniors assist in all operations. *Six times a week,* Third and Fourth Years. Professor McALESTER and Assistant Professor NIFONG.

### **Obstetrics and Gynecology.**

Professor MYER.

1b, 2a. **Obstetrics.** Lectures and clinics. A complete set of abnormal pelves, Auzoux models of the uterus and contents of the various periods of gestation and charts are employed for demonstration. Each student is required to diagnose presentations, positions,

and perform all obstetrical operations on the Schultze-Winckel manikin. The maternity ward of the Hospital offers opportunity for the observation of cases, and besides this, ample material is furnished the students in the outdoor clinic, where they are permitted to care for cases, under the supervision of the Head of the Department. *Three times a week. Second Semester, Third Year; First Semester, Fourth Year.*

3. **Gynecology.** The lectures with demonstration of museum specimens give the students a general theoretical knowledge of the subject. Besides clinics are conducted daily. All clinical operations are witnessed by the students. *Twice a week. Fourth Year.*

#### **Diseases of the Eye, Ear, Nose, and Throat.**

Professor NOYES.

1. **Diseases of the Eye, Ear, Nose, and Throat.** Lectures and Recitations. *Twice a week. Fourth Year. Texts: Fuchs, May, Kyle, and Bacon.*

2. **Clinics.** *Seven times a week. Fourth Year.*

#### **Special Courses.**

1b. **Medical Jurisprudence.** *Once a week, Second Semester. Fourth Year. Professor McALESTER.*

6a. **Dietetics.** The composition, digestibility, and nutritive value of foods as found on the market and as prepared for the table. Principles of Dietetics. Text: Hutchinson's Food and Dietetics. Lectures, demonstrations, and recitations. *Three times a week. First Semester, Third Year. Assistant Professor DAY.*

**Genito-Urinary Diseases.** One lecture a week, with additional clinics. Third Year. Assistant Professor NIFONG.

**Nervous and Mental Diseases.** Two lectures with additional clinics, *every two weeks.* An additional course of four lectures on insanity, with clinical demonstrations, will be given at the Fulton Hospital for the Insane. Third and Fourth Years. Dr. ———.

**Pediatrics.** Two lectures, with additional clinics, *every two weeks.* Third and Fourth Years. Dr. ———.

**Dermatology** (including Electrotherapeutics). Two lectures, with additional clinics, *every two weeks.* Third and Fourth Years. Dr. ———.

1b. **Climatology.** This course is given once a week during the Second semester to Fourth Year students. The course embraces a description of instruments and methods used in determining climatic conditions and changes; the origin of the atmosphere, its evolution, composition, pressure, circulation; atmospheric temperatures—insolation, radiation, absorption, transmission, conduction and reflection; distribution of temperatures over land and water; winds,

general and local, and their influence upon climate; moisture, absolute and relative humidity, and sensible temperature; clouds and sunshine; precipitation, causes and distribution; climate and weather; climate and health; comparison of climatic conditions at well known health resorts of the world; weather records and health statistics; weather forecasting. Mr. REEDER, of the U. S. W. B.

For further information concerning the Department of Medicine, address

A. W. McALESTER, M. D., Dean,  
Columbia, Mo.



UNIVERSITY DORMITORIES





GYMNASIUM











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THE JOURNAL  
OF THE  
UNIVERSITY OF MISSOURI  
BIOGRAPHICAL

VOL. IX, No. 6

JUNE, 1908

BULLETIN OF THE UNIVERSITY OF MISSOURI

# MEDICAL DEPARTMENT

OF THE

UNIVERSITY OF MISSOURI

COLUMBIA, MISSOURI



ANNOUNCEMENT

1908-9

Published monthly by the University of Missouri. Entered April 12, 1902, at Columbia, Missouri, as second-class matter, under Act of Congress of July 16, 1894.





## MEDICAL FACULTY

RICHARD HENRY JESSE, LL. D.,

*President of the University.*

ALBERT ROSS HILL, A. B., Ph. D., LL. D.,

*President-Elect of the University.*

ANDREW WALKER McALESTER, A. M., M. D., LL. D.,

*Professor of Surgery, and Dean of the Faculty.*

CLARENCE MARTIN JACKSON, B. S., M. S., M. D.,

*Professor of Anatomy and Histology, and Junior Dean of the Faculty.*

WOODSON MOSS, M. D., LL. D.,

*Professor of the Practice of Medicine and Therapeutics.*

WILLIAM GEORGE BROWN, B. S., Ph. D.,

*Professor of Chemistry.*

GEORGE LEFEVRE, A. B., Ph. D.,

*Professor of Zoology.*

CHARLES WILSON GREENE, A. B., A. M., Ph. D.,

*Professor of Physiology and Pharmacology.*

WALTER McNAB MILLER, B. S., M. D.,

*Professor of Pathology and Bacteriology.*

GUY L. NOYES, M. D.,

*Professor of Diseases of the Eye and Ear, and Superintendent of the Parker Memorial Hospital.*

MAX WASHINGTON MYER, A. B., M. D.,

*Professor of Gynecology and Obstetrics.*

SIDNEY CALVERT, B. Sc., A. M.,

*Professor of Organic Chemistry.*

\*FRANK GOSNEY NIFONG, M. D.,

*Clinical Professor of Surgery.*

WILLIAM JEPHTHA CALVERT, A. B., M. D.,

*Assistant Professor of Internal Medicine.*

ROBERT BROWNING GIBSON, Ph. D.,

*Assistant Professor of Physiological Chemistry and Pharmacology.*

ELEXIOUS THOMPSON BELL, B. S., M. D.,

*Assistant Professor of Anatomy.*

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\*Resigned.

EDWIN HENRY SCHORER, B. S., M. D.,  
*Assistant Professor of Parasitology and Hygiene.*

CAROLINE MCGILL, A. B., A. M., Ph. D.,  
*Instructor in Anatomy.*

WILLIAM HENRY SCHULTZ, Ph. B., Ph. D.,  
*Instructor in Physiology.*

\*GEORGE REEDER, of the U. S. W. B.,  
*Lecturer on Climatology.*

EDNA D. DAY, B. S., M. S., Ph. D.,  
*Lecturer on Dietetics.*

†—————,  
*Lecturer on Pediatrics.*

SIDNEY I. SCHWAB, M. D.,  
*Non-resident Lecturer on Nervous Diseases.*  
(Professor of Diseases of the Nervous System, St. Louis University.)

JOHN HARRIS DUNCAN, A. M., M. D., LL. D.,  
*Non-resident Lecturer on Dermatology.*  
(Professor of Diseases of the Skin and Syphilis, St. Louis University.)

ERNEST EARL MORLAN, A. B., A. M.,  
*Assistant in Chemistry.*

GEORGE WASHINGTON TANNREUTHER, A. B., A. M.,  
*Assistant in Zoology.*

OLIVER WENDELL HOLMES MITCHELL, M. D.,  
*Assistant in Pathology.*

HENRY WOOD BERGER, A. B.,  
*Research Assistant in Physiology.*

FRANKLIN PARADISE JOHNSON, A. B.,  
*Student Assistant in Anatomy.*

WILLIAM JOSHUA WEESE, A. B.,  
*Student Assistant in Anatomy.*

WEBSTER NEWTON JONES,  
*Student Assistant in Chemistry.*

ROBERT MILTON SMITH,  
*Student Assistant in Chemistry.*

\*In the service of the U. S. Government.

†To be appointed.

## THE UNIVERSITY OF MISSOURI

The University of Missouri is located at Columbia, a beautiful city of about 10,000 inhabitants, on the Wabash and the Missouri, Kansas and Texas railroads. It is the oldest State University west of the Mississippi, having been founded in 1839. It includes the following Departments: (1) College of Arts and Science; (2) Teachers College; (3) College of Agriculture and Mechanic Arts, and Experiment Station; (4) School of Mines (at Rolla, Mo.); (5) Law Department; (6) Medical Department; (7) Engineering Department; (8) Graduate Department; (9) Department of Journalism. The total enrolment for the session 1907-8 was 2536; the enrolment in Medicine was 65. A list of the students enrolled is given in the general University catalogue.

### INCOME.

The income of the University of Missouri, from the State and the United States Government, is about \$600,000 a year. As an integral part of the University, the Medical Department is supported from this income. As a result, a most thorough course of instruction, with the highest standards of scholarship, has been established and maintained. It cannot be too strongly emphasized that this is impossible in a medical school which depends solely upon students' fees for support. Modern medical education is the most costly in the world, and cannot be properly given without generous support from public or private endowment.

### BUILDINGS AND EQUIPMENT.

The University occupies thirty-three buildings, a birds-eye view of which is given on another page. Several of these buildings are utilized, entirely or in part, for the Medical Department. The various scientific laboratories and museums are well equipped, and afford valuable opportunity for study in sciences collateral to Medicine.

Athletics, debating, and other phases of student activity in the University form another important addition to the educational facilities usually provided by an isolated medical school. The combined course offered in Medicine and in Arts and Science will be discussed later.

## FREE TUITION.

On account of free tuition and low cost of living, the University is able to offer the highest quality of instruction in the various Departments at a cost lower than that in any other institution of similar rank in the United States. All Departments are open alike to men and to women. The large University catalogue describing in detail the work of the various departments will be mailed to any address upon application to the University Publisher, Columbia, Missouri.

### UNIVERSITY CALENDAR—SESSION 1908-9.

1908—September 14, Monday .....	Session Begins
September 14-16 .....	Entrance Examinations
September 17, Thursday .....	Opening Convocation
September 18, Friday ..	Class Work Begins
November 25, Weanesday, at 4 p. m., to	
November 30, Monday, at 8 a. m. ....	Thanksgiving Holidays
December 23, Wednesday, at 4 p. m., to	
1909—January 5, Tuesday, at 8 a. m. ....	Christmas Holidays
January 25-30 .....	Mid-Year Examinations
February 1, Monday .....	Second Semester Begins
February 22, Monday .....	Holiday
May 24-29 .....	Final Examinations
June 2, Wednesday ....	Commencement Day

# MEDICAL DEPARTMENT

## HISTORICAL.

The "McDowell Medical College," founded in St. Louis in 1840, was the first medical school established west of the Mississippi river. In 1845, this school became the Medical Department of the University of Missouri. Shortly before the Civil War, however, it was discontinued; but was re-established in Columbia in December, 1872.

## POLICY.

The Medical Department has always stood for the highest standards of medical education, and was a pioneer in introducing and developing the laboratory method. Laboratory work in Anatomy, Chemistry, and Microscopy was required of students from the date of re-establishment in 1872. A few years later, laboratory work in Pathology and in Physiology was added, and in 1891 the laboratories of Histology and Bacteriology were established. The Medical Department of the University of Missouri was also one of the first schools to establish these fundamental medical sciences on a University basis, by placing them in charge of specialists who are not allowed to practice medicine, but devote their time exclusively to teaching and investigation.

## REQUIREMENTS FOR ADMISSION.

The University of Missouri has always stood firmly for a high standard of preliminary education for medical students. It was among the first schools to require the completion of a High School course, and was later one of the first to require in addition the completion of one year of college work before admission to the Medical Department. It is now widely recognized that a High School course alone is insufficient training in preparation for the difficult work in the modern medical curriculum. While for the present only one year of college work is required, it is strongly recommended that two years' college work preparatory to Medicine be taken, as outlined under the Combined Course.

The entrance requirements for the regular four years' course in Medicine include: (a) The completion of an approved four years' High School course; or the equivalent of 15 units work, of which at least 3 units must be in English, 1 in Algebra, 1 in Plane Geometry,



and 2 in Latin. The remaining 8 units may be chosen from the following list of subjects: English, Algebra, Geometry, Trigonometry, History, Civil Government, Latin, Greek, German, French, Spanish, Physics, Chemistry, General Biology, Zoology, Botany, Drawing, Physiography, Physiology. A detailed description of the work required for credit in each of these subjects is given on pp. 74-81 of the General Catalogue of the University.

(b) One year of college work as follows: English, 6 hours; German, 6 hours; General Zoology, 6 hours; General Physics, 6 hours; Inorganic Chemistry, 6 hours. Equivalent work in foreign language may be substituted for the English and German. A student who lacks a part of the college work required for entrance may be admitted to the Department of Medicine upon condition that he register for this work in the College of Arts and Science. He may then take in addition such of the first year's work in Medicine as does not conflict with the work required for entrance.

The requirements for admission to the Combined Course in Medicine and in Arts and Science are those outlined under (a). A student who has completed (a), but not the college work required for admission to the four years' Medical course, may therefore get this required college work by taking the first year of the Combined Course.

#### SPECIAL STUDENTS.

Students who are not candidates for the degree may be admitted to the Medical Department without passing the regular examinations required for entrance, under the following conditions: (1) They must be at least 21 years of age; (2) They must show good reasons for not taking a regular course; (3) They must pass such examinations or other tests as shall demonstrate fitness to pursue profitably the subjects selected by them; (4) They will be allowed to take work in not more than two subjects, with such kindred work as the professor in charge of the major subjects may suggest. Such students are expected to do specially good work in the subjects which they choose. If at any period of the session the work becomes unsatisfactory in one or both of the major subjects, their connection with the University shall be severed by the Dean or the Department. Entrance cards for special students are issued by the Dean, and approved by the professors of the major subjects.



MEDICAL LABORATORY BUILDING



PARKER MEMORIAL HOSPITAL

## ADVANCED STANDING.

Every applicant for advanced standing is required to present credentials from an accredited college showing satisfactory completion of courses equivalent to those for which he seeks credit. Moreover, the usual entrance requirements to the first year class must be satisfied, and evidence of a good moral character must be presented to the Dean of the Medical Department.

## FEES AND EXPENSES.

The University of Missouri offers a thorough medical education at a cost lower than that at any other first class medical school in the country. The total necessary expenses are less than \$200 a year. Tuition is free to all students. The only fees required are a library fee of \$10 a year, and laboratory fees amounting to about \$40 a year in the first and second years, and \$10 in the third and fourth years.

*Every student who applies for admission to the University after the first week of the semester in which he seeks admission shall pay a fee of \$5 for late registration, in addition to the fees already provided for. No student shall receive credit who enters later than October 15.*

The two Dormitories for men, Benton Hall and Lathrop Hall, lodge 140 students. Meals are furnished by the University Dining Club, in Lathrop Hall. Its capacity reaches 400. The cost of table board in this Dining Club has not exceeded \$2.00 a week. The cost of room rent, board, lights, and laundry to a student living in a dormitory, and taking his meals in the University Dining Club does not exceed \$3 a week. Board and lodging may also be obtained in private families at from \$3 to \$5 a week.

Applications for rooms in Benton Hall or Lathrop Hall should be made promptly to the "Secretary of the University," for all rooms in these halls are always engaged before the opening of the session, and rooms are allotted to applicants in the order of their applications. In order to reserve a room, it is necessary to make a deposit of \$5, which is credited on the room rent when paid.

Books and stationery are supplied at low rates by the students' Co-operative Store, and may be estimated at \$25 a year.

Many medical students support themselves wholly or in part by work of various kinds. The Young Men's Christian Association of the University, which will have quarters in the new Student Building erected at a cost of \$50,000, has an employment bureau which renders to those desiring it valuable assistance in finding work.

## BUILDINGS AND EQUIPMENT.

### 1. Medical Laboratory Building.

This is a new stone and brick building (see cut), 48x150 feet, three stories high, with a special system of steam heating and forced ventilation. It was specially designed for the Medical Laboratories, and is splendidly equipped to meet the needs of modern laboratory instruction and research. The following is a brief list of the various rooms and equipment in this building.

The department of Anatomy and Histology occupies (1) a large dissecting room, well lighted and ventilated, with dissecting tables, students' lockers, display cases for specimens, models, etc.; (2) an advanced anatomical laboratory, specially equipped for the study of Topographic Anatomy, including serial sections through formalin-hardened bodies; histological laboratory (with preparation and store-room in connection), thoroughly equipped with lockers, tables, microscopes, microtomes, and other apparatus for instruction and research in microscopic work; (4) lecture room for Anatomy and Histology, equipped with Auzoux manikin, projection apparatus, charts, etc.; (5) Museum room, containing a large number of models and specimens in human anatomy; (6) professor's office and research laboratory; (7) embalming and cold storage rooms, with an abundance of well-preserved cadavers for the work in dissection.

The department of Physiology, Physiological Chemistry, and Pharmacology occupies the following rooms: (1) A large laboratory (with adjoining store-room) equipped with tables, lockers, and sets of apparatus for the students in Physiology and Pharmacology; (2) a blood-pressure room, particularly for mammalian experiments; (3) a research laboratory, thoroughly equipped, for advanced students in Physiology and Pharmacology; (4) professor's office, with adjacent research laboratory; (5) professor's office and research laboratory in Physiological Chemistry; (6) large students' laboratory, with adjacent store-room, thoroughly equipped for work in Physiological Chemistry; (7) animal room; (8) mechanic's shop; (9) lecture room (in common with Pathology).

The department of Pathology and Bacteriology occupies (1) a large students' laboratory for Bacteriology and Pathological Histology, well equipped with lockers, microscopes with oil immersion lenses, etc.; (2) a preparation room for Bacteriology, with sterilizers, incubators, etc.; (3) professor's office, with adjacent private laboratory splendidly equipped for research work in Pathology; (4) large room for autopsies and work in gross Pathology, including a collection of pathological specimens in glass cases; (5) an animal



room and store-room; (6) office and research laboratory for Bacteriology; (7) lecture-room (in common with Physiology).

Two clinical laboratories are also located in the Medical Laboratory building, viz.: (1) Students' laboratory in Clinical Microscopy, with complete equipment of microscopes, centrifuge, haemocytometers, and other apparatus used in clinical diagnosis; (2) research laboratory well equipped for investigation in Internal Medicine.

## MEDICAL LIBRARY.

No Medical school of to-day can be considered well equipped without a good library. The Medical library is placed in a room on the upper floor of the Medical Laboratory building, and is open six hours daily, except Sunday. It contains about 3,000 bound volumes, and a large number of pamphlets. The principal medical works of reference are included, and the leading medical periodicals of the world (about 70 in number) are received regularly and placed on file. The main University Library also contains many works of interest and value relating to the medical sciences.

### 2. Animal House.

An appropriation was made by the last general assembly for an Animal House for the Medical Laboratories. This building is now being constructed near the Medical Laboratory Building; and will be ready for use in the Fall of 1908.

### 3. Chemistry Building.

The Chemistry Building is a large brick building, two stories and basement, located on the University Campus and used in common by the Medical Department and other Departments of the University. It contains several large laboratories and lecture rooms, with many smaller rooms for various purposes. The building is thoroughly equipped with facilities for instruction and investigation in Inorganic, Organic and Physical Chemistry, including Qualitative and Quantitative Analysis.

### 4. Museum Building.

The Museum Building is also a large brick building on the University Campus and devoted primarily to Zoology and Geology. In the department of Zoology, the Medical students receive instruction in Embryology, a large well equipped laboratory, with lecture room, museum, etc., being available for this purpose. Courses in Comparative Anatomy, Cytology, etc., are also elective to Medical students. A course in Dietetics, required of third year Medical stu-



dents, is also given in this building, in the lecture room and laboratory of the department of Home Economics.

5. Other Buildings.

In several other buildings on the University campus instruction is offered in many lines open to Medical students as electives, and of especial service to those taking the Combined Course in Medicine and in Arts and Science. The Gymnasium and Athletic grounds are open for the use of all students, and special opportunities are offered to those interested.

THE PARKER MEMORIAL HOSPITAL.

Clinical Staff.

ANDREW WALKER McALESTER, M. D. ....	Surgeon
*FRANK G. NIFONG, M. D. ....	Surgeon
WOODSON MOSS, M. D. ....	Physician
WILLIAM J. CALVERT, M. D. ....	Physician
GUY L. NOYES, M. D. ....	Ophthalmologist and Otologist
MAX W. MYER, M. D. ....	Gynecologist and Obstetrician
AUGUST W. KAMPSCHMIDT, M. D. ....	Anesthetist
WALTER McNAB MILLER, M. D. ....	Pathologist
EDWIN H. SCHORER, M. D. ....	Bacteriologist

Officers.

GUY L. NOYES, M. D. ....	Superintendent
ROBERT B. HILL ....	Intern
JOHN R. PINION ....	Intern
JOSEPHINE SHIELDS	

	Head Nurse and Principal of Training School for Nurses
DORA BATTSON ....	Assistant Head Nurse

By the gift of Wm. L. Parker, the Department of Medicine is supplied with an excellent Hospital, which has now been in operation for five years. In the words of the donor, it is "for the benefit of the Medical Department." This building (see cut) is a handsome, modern structure conveniently located on high ground at the west side of the Campus. The building is heated by steam, lighted by gas and electricity, and well ventilated. The Hospital has beds and accommodations for about 45 patients. It is supplied with a modern equipment in the Medical and Surgical appliances which contribute to the comfort and welfare of the patients.

The Parker Memorial Hospital is a State Hospital, owned and controlled by the University, and is open to the sick of Missouri

\* Resigned.

for the treatment of accidents, of acute and subacute diseases, and of chronic curable diseases. Cases of contagious diseases are not admitted.

The primary purpose of the Hospital is to furnish clinical instruction to the students of the Department of Medicine, in order that by the observation and study of disease they may be fitted to practice medicine intelligently. The patients serve to illustrate the nature of disease, its course, and its treatment. In the use of patients in this way nothing is done to offend their sensibilities, and their interest and welfare are constantly and carefully regarded by those in charge of the Hospital.

The rates for clinical patients are \$7.00 a week for the general wards; or \$15.00 a week for single room. These charges include medical and surgical attendance, board and ordinary nursing and medicines. A limited number of private cases is also received at a rate of \$15.00 a week, in addition to a fee for the physician.

*Clinical obstetrical cases are received free of charge. Such patients will be admitted for a limited time before confinement, and will receive the best of care. For particulars, write to the Superintendent of the Hospital.*

#### THE BUSCH CLINICAL AMPHITHEATRE.

A Clinical Amphitheatre adjoining the Hospital has been provided by the gift of Adolphus Busch, of St. Louis. It has a seating capacity of about one hundred, is supplied with accessory rooms for sterilizing, anaesthetizing, etc., and has a number of special rooms for the work in dispensary clinics. The interior of the Amphitheatre has recently been equipped with the various medical and surgical accessories of modern clinics.

Out-patient clinics are established in Eye, Ear, Nose, and Throat; in Internal Medicine; in Surgery; and in Obstetrics and Gynecology. Students have opportunity for observing and treating patients in these clinics, as well as in the wards of the Hospital. The classes, in small sections, work always under the direction and criticism of the Instructor in charge.

#### THE TRAINING SCHOOL FOR NURSES.

The University maintains a Training School for Nurses in connection with the Department of Medicine. A three-year course of theoretical and practical instruction is offered and on the completion of the course the candidate is awarded a Certificate of Graduation. Being connected with the University and having the facilities

of our scientific laboratories and of the Parker Memorial Hospital gives to those in training superior advantages, and produces nurses thoroughly competent in the theory and practice of nursing in all its details.

### SCHOLARSHIP.

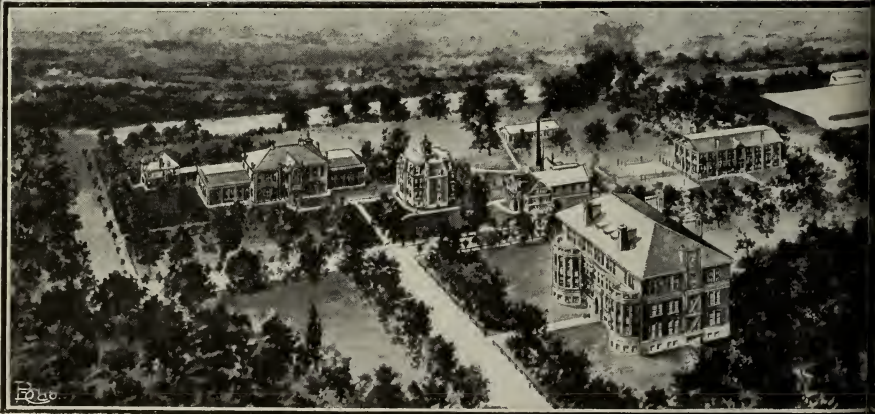
The Rollins Scholarship in the Department of Medicine is a prize of fifty dollars, which is awarded to that member of the Junior (Third Year) class who has made the best record during the course.

### COURSE IN MEDICINE AND IN ARTS AND SCIENCE.

It is the policy of the Department of Medicine to encourage in every way possible the gaining of a liberal education as a sound preparation for the professional study of Medicine.

Students of Medicine are strongly urged to take a general scientific course in conjunction with their work in Medicine. The student in the Department of Medicine may, by a proper choice of electives in the College of Arts and Science, do his required work in Medicine, and at the same time meet the requirements for the degree of Bachelor of Arts (see course below). This, it is true, prolongs the course to at least five years, but the greater power and broader training acquired makes a better and more successful physician. Such students are registered in both the Department of Medicine and in the College of Arts and Science, and must fill the requirements of both. Candidates for both the A. B. and M. D. degrees are recommended to elect subjects required or which lead up to subjects required in Medicine, in approximately the order suggested by the following tabulated statement. With the exception of Physical Training or Military Science, the work outlined for the First Year is identical with the college work required for admission to the regular course in Medicine.

The entrance requirements for the combined course outlined below is that specified for the College of Arts and Science, i. e., a high school course equivalent to fifteen units. A student who follows this course will, at the end of four years, have completed the requirements for the A. B. degree (provided that six hours of the electives be chosen from work "for undergraduates and graduates" in the Biological Group). He will also have completed the first two years of the course in Medicine, and will require only two years more for the M. D. degree. All students who contemplate taking this course should consult the Committee on Combined Course (at present Professor Jackson).



BIRD'S-EYE VIEW OF





UNIVERSITY OF MISSOURI



# COURSE OF INSTRUCTION (Four Years' Course).

Subject	Character of Course	Semester Credits		Total Hours	
		I	II	Lecture	Laboratory or Clinics
FIRST YEAR					
Osteology . . . . .	3 hrs. recitation a week. . . . .	3	—	48	—
Neurology . . . . .	1 lecture, 5 hrs. laboratory a week . . . . .	—	3	16	80
Dissection . . . . .	7½ hrs. laboratory a week. . . . .	3	3	—	240
Normal Histology..	1 lecture, 7½ hrs. laboratory a week. . . . .	4	4	32	240
Organic Chemistry..	2 lectures, 2½ hrs. laboratory a week. . . . .	3	3	64	80
Embryology . . . . .	1 lecture, 5 hrs. laboratory a week . . . . .	—	3	16	80
Bacteriology. . . . .	7½ hrs. laboratory a week . . . . .	3	—	—	120
Total . . . . .		16	16	176	840
SECOND YEAR					
Advanced Dissection	7½ hrs. laboratory a week. . . . .	3	—	—	120
Topographic Anatomy. . . . .	7½ hrs. laboratory a week. . . . .	—	3	—	120
Physiology and Physiological Chemistry	5 lectures, 12½ hrs. laboratory a week . . . . .	10	—	80	200
Pharmacology . . . . .	2 lectures, 5 hrs. laboratory a week. . . . .	—	4	32	80
General Pathology..	3 lectures, 2½ hrs. laboratory a week. . . . .	4	—	48	40
Special Pathology...	4 lectures, 10 hrs. laboratory a week . . . . .	—	8	64	160
Hygiene. . . . .	3 lectures a week. . . . .	—	3	48	—
Total . . . . .		17	18	272	720

# COURSE OF INSTRUCTION—Continued.

Subject	Character of Course	Semester Credits		Total Hours	
		I	II	Lecture	Laboratory or Clinics
THIRD YEAR					
Medicine (Practice and Clinical Medicine) . . . . .	3 lectures, 6 hrs. clinics a week .	5	5	96	192
Therapeutics . . . . .	2 lectures a week. . . . .	2	2	64	—
Physical Diagnosis and Clinical Pathology . . . . .	6 hrs. laboratory a week . . . . .	3	3	—	192
Surgery (inc. Principles of Surgery, Minor Surgery and operative Surgery on Cadaver) . . . . .	3 lectures, 6 hrs. clinics or laboratory a week . . . . .	5	6	96	192
Genito-Urinary Diseases. . . . .	1 lecture a week, with additional clinics . . . . .	I	I	32	*
Obstetrics. . . . .	3 lectures a week, with additional clinics . . . . .	—	3	48	*
Nervous and Mental Diseases . . . . .	1 lecture a week, with additional clinics . . . . .	I	I	36	*
Pediatrics. . . . .	1 lecture a week, with additional clinics . . . . .	I	I	32	*
Dermatology and Electrotherapeutics . . . . .	1 lecture a week, with additional clinics . . . . .	I	I	32	*
Dietetics. . . . .	3 hrs. lecture and laboratory demonstrations. . . . .	3	—	48	—
Total. . . . .		22	23	484	576*

\*Plus additional clinics variable in amount.

# COURSE OF INSTRUCTION—Continued.

Subject	Character of Course	Semester Credits		Total Hours	
		I	II	Lecture	Laboratory or Clinics
	FOURTH YEAR				
Practice of Medicine (including Clinical Medicine) . . . .	3 lectures, 6 hrs. clinics a week .	5	5	96	192
Surgery . . . . .	3 lectures, 6 hrs. clinics a week .	5	5	96	192
Obstetrics. . . . .	3 lectures a week, with additional clinics . . . . .	3	—	48	*
Gynecology . . . .	2 lectures, 3 hrs. clinics a week .	2	2	64	96
Nervous Diseases. .	1 lecture a week, with additional clinics. . . . .	1	1	32	*
Pediatrics. . . . .	1 lecture a week, with additional clinics. . . . .	1	1	32	*
Dermatology and Electrotherapeutics	1 lecture a week, with additional clinics . . . . .	1	1	32	*
Eye, Ear, Nose and Throat. . . . .	2 lectures, 5½ hrs. clinics a week . . . . .	3	3	64	176
Climatology. . . . .	1 lecture a week . . . . .	—	1	16	—
Medical Jurispru- dence . . . . .	1 lecture a week . . . . .	—	1	16	—
	Total. . . . .	21	20	496	656
	Total four years . . . .	74	74	1428	2792

\*Plus additional clinics variable in amount.

COMBINED COURSE LEADING TO THE DEGREES OF A. B.  
AND M. D. RECOMMENDED BY THE MEDICAL  
FACULTY.

	1st Sem.	2d Sem.
FIRST YEAR.	Hrs. Credit.	Hrs. Credit.
English .....	3	3
General Zoology .....	3	3
Chemistry, Inorganic .....	4	4
General Physics .....	3	3
German .....	3	3
Physical Training or Military Science ..	1	1
	<hr/> 17	<hr/> 17

	1st Sem.	2d Sem.
SECOND YEAR.	Hrs. Credit.	Hrs. Credit.
Chemistry, Organic .....	3	3
History .....	3	3
Ancient Language ..	3	3
Psychology .....	3	3
Physical Training or Military Science .	1	1
Elective .....	4	4
	<hr/> 17	<hr/> 17

THIRD YEAR.		
Osteology .....	3	0
Neurology .....	0	3
Practical Anatomy .....	3	3
Normal Histology .....	4	4
Embryology (Zoology 4b) .....	0	3
Bacteriology .....	3	0
Elective .....	4	4
	<hr/> 17	<hr/> 17

FOURTH YEAR.		
Physiology and Physiological Chemistry	10	0
Pharmacology .....	0	4
Pathology, General and Special .....	4	8
Hygiene.....	0	3
Advanced Dissection .....	3	0
Topographic Anatomy ..	0	3
	<hr/> 17	<hr/> 18

## FIFTH YEAR.

Same as the Third Year of Medicine in the Four Years' Course.

## SIXTH YEAR.

Same as the Fourth Year of Medicine in the Four Years' Course.

With the consent of the Dean, Medical students may take accessory work offered in other Departments of the University.

### COURSES IN DETAIL.

(Courses designated by a number with the letter a attached, thus: 4a, are given the first semester only. Those designated by a number with the letter b attached, thus: 4b, are given the second semester only. Those designated merely by a number are continuous courses and are given both semesters.)

### Anatomy and Histology.

Professor JACKSON; Assistant Professor BELL; Dr. MCGILL;  
Mr. WEESE.

2a. **Osteology.** Recitations and Demonstrations. A complete disarticulated human skeleton is issued to every two students for use during this course. Fee for use of skeleton, \$2; deposit of \$10 required. F. Th. S., at 8. *First Year.*

3. **Normal Histology.** A study of the microscopic anatomy of the body. Each student prepares, stains, and mounts permanently about 100 specimens for study. Laboratory fee \$3.50 each semester. Lecture, M., at 10; Laboratory, Th. S., 8-1. *First Year.*

4. **Dissection.** The upper and lower extremities are dissected in the first semester; the thorax and abdomen in the second. Laboratory fee \$4.50 each semester. Laboratory, M. W. F., 2-4:30. *First Year.*

5b. **Neurology.** A study of the central nervous system and sense organs. Laboratory, with one lecture a week. Laboratory fee \$3.50. M. W. F., 8-10. *First Year.*

6a. **Advanced Dissection.** Dissection of the head and neck. Laboratory fee \$4.50. Laboratory, M. W. F., 2-4:30. *Second Year.*

7b. **Topographic Anatomy.** A study of the topography of the various organs by means of serial sections through the entire body. Laboratory fee \$4.50. Laboratory, M. W. F., 2-4:30. *Second Year.*



8b. **Advanced Human Embryology.** *One lecture and two laboratory periods a week.* Elective.

9. **Advanced Anatomy.** Advanced work in Anatomy or Histology, the character of which may be varied to suit individual needs. Hours to be arranged. Elective.

10. **Research.** Opportunity is afforded to a limited number of properly qualified students for original investigation in Anatomy or Histology. Hours to be arranged. Elective.

### **Physiology and Pharmacology.**

Professor GREENE; Assistant Professor GIBSON; Dr. SCHULTZ; Mr. BERGER.

2a. **Experimental Physiology.** The physiology and physiological chemistry of the blood, secretion, digestion, nutrition, and excretion. Laboratory fee \$4.00. Lectures, T. Th., at 8; Laboratory, T. Th., 9-11:30. Assistant Professor GIBSON.

3a. **Experimental Physiology.** The physiology of muscle, circulation, respiration, nervous system, and sense organs. Laboratory fee \$6.00. Lectures, M. W. F., at 8; Laboratory, M. W. F., 9-11:30. Professor GREENE; Dr. SCHULTZ.

4b. **Physiological Chemistry.** The chemistry of animal tissues and fluids, and metabolism of foods. Elective. Laboratory fee \$5.00. Assistant Professor GIBSON.

5b. **Experimental Pharmacology.** This course presents the physiological action of drugs. The laboratory tests are arranged by groups so that students may observe the results of a wide range of experiments. Laboratory fee \$5.00. Lectures, T. Th., at 8; Laboratory, T. Th., 2-4:30. Professor GREENE; Assistant Professor GIBSON; Dr. SCHULTZ.

10. **Advanced Physiology.** Elective. Hours to be arranged.

11. **Investigation.** Elective. Hours to be arranged.

### **Pathology, Bacteriology and Hygiene.**

Professor MILLER; Assistant Professor SCHORER; Dr. MITCHELL.

1. **Pathology, General and Special.** The conduct of the necropsy, macroscopic, microscopic, bacteriologic, experimental writing of protocol. This work includes the study of degeneration, regeneration, inflammation, the effects of poisons, the infections,

animal parasites, and tumors. When the work of the student is not directed to the post-mortem examination or demonstration of gross material, about five microscopic sections are given daily to the students for staining, mounting, and study. These preparations have a permanent value and become the property of the student. *Three lectures and one laboratory period, first semester. Four lectures and four laboratory periods second semester.* Second Year. Laboratory fee for first semester, \$5; second semester, \$10.

2. **Pathology, Research Work.** Elective. Professor MILLER.

3a. **Bacteriology: General, Medical and Sanitary.** A laboratory and lecture course to give the student a comprehensive view of the whole field of bacteriology and parasitology. The student prepares media, and learns the principles of sterilization, disinfection, isolation, cultivation, staining and identification of bacteria. Pathogenic protozoa and other parasites are also considered. M. F., 11-1; W., 9-1. First Year. Laboratory fee \$10. Assistant Professor SCHORER.

4. **Bacteriology, Research Work.** Elective. Assistant Professor SCHORER.

5b. **Hygiene.** Lectures on the following subjects: History of Hygiene; general hygiene of cities, dwellings, schools, prisons, etc.; commercial hygiene; ways in which important diseases spread, and the means of preventing epidemics; vaccination; disinfection with special reference to households and schools; quarantines; organization of boards of health in different countries; value of compulsory registration, vital statistics, etc. Lectures. M. W. F., 12-1. Second Year. Assistant Professor SCHORER.

7. **Seminary.** Elective for advanced students and graduates. Twice a month. Professor MILLER and Assistant Professor SCHORER.

## Chemistry.

11. **Organic Chemistry.** The aim of this course is to give a general survey of the principal classes of organic compounds, such as hydrocarbons, alcohols, phenols, ethers, aldehydes, acids, esters, fats, carbohydrates, etc. In so far as it is possible, the student prepares in the laboratory representatives of the various classes of compounds and studies their reactions. Laboratory fee \$5. Lecture, F., 10; Laboratory, T. Th., 2-4:30. Professor CALVERT.

For other courses in Chemistry which are given in the College of Arts and Science and which may be elected, see General Catalogue of the University.

## Zoology.

Professor LEFEVRE; Mr. TANNREUTHER.

**4b. Embryology of Vertebrates.** The course is designed to lay the foundation of vertebrate embryology. In the laboratory the development of the chick and pig is carefully studied from preparations of entire embryos and from sections. These observations are used as a basis of comparison for the study of human embryology. Laboratory fee \$5. Lectures and Laboratory, M. W. F., 11 to 1.

**Electives.** Courses in Comparative Anatomy of Vertebrates and Cytology may be elected by students in the Department of Medicine who are prepared to pursue them. See announcement of the College of Arts and Science.

## Internal Medicine and Therapeutics.

Professor MOSS; Assistant Professor CALVERT.

**1. Practice of Medicine.** Lectures and recitations. Three hours a week. Third and Fourth Years. Professor MOSS.

**2. Clinical Medicine.** Clinics are held six hours a week in the Dispensary and in the wards of the Parker Memorial Hospital. Students in this course are required to make written reports of cases in their charge, and to write articles upon subjects assigned. Credit, 2 hours each semester. Third and Fourth Years. Professor MOSS and Assistant Professor CALVERT.

**3. Clinical Pathology.** Pursued during two laboratory periods a week throughout the Third Year. The work consists of lectures and practical study of sputum, blood, etc., in the laboratory. Each student is provided with a microscope and necessary apparatus. Especial attention is given to the application of laboratory methods to diagnosis. Assistant Professor CALVERT.

**4. Clinical Pathology.** Pursued during one laboratory period a week throughout the Fourth Year. Assistant Professor CALVERT.

**5. Therapeutics.** Aside from drugs, therapeutical consideration, such as hydrotherapy, electrotherapy, dietetics, etc., receive due attention. Prescription writing becomes a matter of daily drill. T. Th., at 8. Third Year. Professor MOSS.

**6. Physical Diagnosis.** Pursued during one laboratory period a week throughout the Third Year. The work consists of (1) lectures on auscultation with practical work on the normal and diseased organs; (2) a study of the several diseases affecting the

thoracic viscera, by lectures, demonstrations of organs and charts whenever possible, and by clinics. The class will visit some of the large State institutions for additional work. Assistant Professor CALVERT.

**Elective.** A limited number of students prepared to do advanced work may be assigned to special problems during the Second semester of the Third and throughout the Fourth Year. Assistant Professor CALVERT.

## Surgery.

Professor McALESTER; Assistant Professor ———.

1. **Principles of Surgery.** Lectures and recitations, including inflammation, ulceration, septicaemia, etc., bandaging, dislocation and fracture dressing, major and minor operations. *Three hours a week.* Third and Fourth Years.

2b. **Operative Surgery.** This course includes operations on the cadaver and on the lower animals, with instruction in the details of operative preparations, dressings, etc. One laboratory period a week. *Second Semester.* Third Year.

3. **Clinical Surgery.** Clinics are held daily in the Dispensary and the wards of the Parker Memorial Hospital. Juniors and Seniors assist in all operations. Credit, 2 hours each semester. Third and Fourth Years.

4. **Genito-Urinary Surgery.** One lecture a week, with additional clinics. Third Year.

## Obstetrics and Gynecology.

Professor MYER.

1b, 2a. **Obstetrics. Lectures and clinics.** A complete set of abnormal pelves, Auzoux models of the uterus and contents of the various periods of gestation and charts are employed for demonstration. Each student is required to diagnose presentations, positions, and perform all obstetrical operations on the Schultze-Winckel manikin. The maternity ward of the Hospital offers opportunity for the observation of cases, and besides this, ample material is furnished the students in the outdoor clinic. *Three hours a week. Second Semester,* Third Year; *First Semester,* Fourth Year.

3. **Gynecology.** The lectures with demonstration of museum specimens give the students a general theoretical knowledge of the

subject. Bedside clinics are conducted daily. All clinical operations are witnessed by the students. *Twice a week.* Fourth Year.

### **Diseases of the Eye, Ear, Nose, and Throat.**

Professor NOYES.

1. **Diseases of the Eye, Ear, Nose, and Throat.** Lectures and Recitations. *Twice a week.* Fourth Year. Texts: Fuchs, May, Kyle, and Gleason.

2. **Clinics.** *Four times a week.* Credit, 2 hours each semester. Fourth Year.

### **Special Courses.**

1b. **Medical Jurisprudence.** *Once a week, Second Semester.* Fourth Year. Professor MCALESTER.

6a. **Dietetics.** The composition, digestibility, and nutritive value of foods as found on the market and as prepared for the table. Principles of Dietetics. Text: Hutchinson's Food and Dietetics. Lectures, demonstrations, and recitations. *Three times a week.* First Semester, Third Year. Assistant Professor DAY.

1. **Nervous and Mental Diseases.** Two lectures with additional clinics, *every two weeks.* The course in Nervous diseases will be based on the case history system. Additional lectures on insanity, with clinical demonstrations, will be given at the Fulton Hospital for the Insane. Third and Fourth Years. Professor SCHWAB.

1. **Pediatrics.** Two lectures, with additional clinics, *every two weeks.* Third and Fourth Years. Dr. ———.

1. **Dermatology** (including Electrotherapeutics). Two lectures, with additional clinics, *every two weeks.* In connection with this course, a special series of demonstrations in Dermato-Pathology will be given by Dr. HOUWINK. Third and Fourth Years. Professor DUNCAN.

1b. **Climatology.** This course is given once a week during the Second semester to Fourth Year students. Mr. REEDER.

1a. **Comparative Medicine.** Lectures, laboratories, and clinics. *Twice a week.* Elective. Professor CONNAWAY.

For further information concerning the Medical Department, address

C. M. JACKSON, M. D., Junior Dean,  
Columbia, Mo.















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VOL. X, No. 6

JUNE, 1909

BULLETIN OF THE UNIVERSITY OF MISSOURI

# SCHOOL OF MEDICINE

OF THE

UNIVERSITY OF MISSOURI

COLUMBIA, MISSOURI



**ANNOUNCEMENT**

**1909-10**

Published monthly by the University of Missouri. Entered April 12, 1902, at Columbia, Missouri, as second-class matter, under Act of Congress of July 16, 1894.

## UNIVERSITY CALENDAR, 1909-10.

- 1909—September 20, 21, 22. Entrance Examinations and Registration  
September 23, Thursday, at 8 a. m. . . . . Class Work Begins  
September 23, Thursday at 10 a. m. . . . . Opening Convocation  
November 24, Wednesday at 12 m. to  
November 29, Monday at 8 a. m. . . . . Thanksgiving Holidays  
December 22, Wednesday at 4 p. m. to
- 1910—January 4, Tuesday at 8 a. m. . . . . Christmas Holidays  
January 31 to February 5 . . . . . Mid-Year Examinations  
February 9, Wednesday at 8 a. m.  
Class Work for Second Semester Begins  
February 22, Tuesday . . . . . Holiday  
May 30 to June 4 . . . . . Final Examinations  
June 9, Thursday . . . . . Commencement Day

## MEDICAL FACULTY.

- ALBERT ROSS HILL, A. B., Ph. D., LL. D.,  
*President of the University.*
- CLARENCE MARTIN JACKSON, B. S., M. S., M. D.,  
*Professor of Anatomy and Histology, and Dean of the Faculty.*
- ANDREW WALKER McALESTER, A. M., M. D., LL. D.,  
*Emeritus Professor of Surgery.*
- WOODSON MOSS, M. D., LL. D.,  
*Professor of the Practice of Medicine and Therapeutics.*
- WILLIAM GEORGE BROWN, B. S., Ph. D.,  
*Professor of Chemistry.*
- GEORGE LEFEVRE, A. B., Ph. D.,  
*Professor of Zoology.*
- CHARLES WILSON GREENE, A. B., A. M., Ph. D.,  
*Professor of Physiology and Pharmacology.*
- WALTER McNAB MILLER, B. S., M. D.,  
*Professor of Pathology and Bacteriology.*
- GUY L. NOYES, M. D.,  
*Superintendent of the Parker Memorial Hospital.*
- SIDNEY CALVERT, B. Sc., A. M.,  
*Professor of Organic Chemistry.*
- ROBERT BANKS GIBSON, Ph. B., Ph. D.,  
*Assistant Professor of Physiological Chemistry and Pharmacology.*
- ELEXIOUS THOMPSON BELL, B. S., M. D.,  
*Assistant Professor of Anatomy.*
- EDWIN HENRY SCHORER, B. S., M. D.,  
*Assistant Professor of Parasitology and Hygiene.*
- \*CAROLINE MCGILL, A. B., A. M., Ph. D.,  
*Instructor in Anatomy.*
- GEORGE WASHINGTON TANNREUTHER, A. B., A. M.,  
*Assistant in Zoology.*
- OLIVER WENDELL HOLMES MITCHELL, M. D.,  
*Assistant in Pathology.*
- LAWSON GENTRY LOWREY, A. B.,  
*Assistant in Anatomy.*
- LELAND BARTON ALFORD, A. B.,  
*Assistant in Physiology.*

\*On leave of absence, 1909-10.

# THE UNIVERSITY OF MISSOURI.

## GENERAL INFORMATION.

The University of Missouri is located at Columbia, a beautiful city of about 10,000 inhabitants, on the Wabash and the Missouri, Kansas & Texas railroads. It is the oldest State University west of the Mississippi, having been founded in 1839. It includes the following departments: (1) Graduate Department; (2) College of Arts and Science; (3) College of Agriculture; (4) School of Education; (5) School of Law; (6) School of Medicine; (7) School of Engineering; (8) School of Journalism; (9) School of Mines (at Rolla). The total enrolment for the session 1908-09 was 2,855; the enrolment in Medicine was 57. A list of the students enrolled is given in the general University Catalogue. A copy of this catalogue, describing in detail the work of the various departments, will be mailed free upon application.

## INCOME.

The income of the University of Missouri, from the State and the United States Government, is about \$600,000 a year. As an integral part of the University, the School of Medicine is supported from this income. As a result, a most thorough course of instruction with the highest standards of scholarship, has been established and maintained. It cannot be too strongly emphasized that this is impossible in a medical school which depends solely upon students' fees for support. Modern medical education is the most costly in the world, and cannot be properly given without generous support from public or private endowment.

## BUILDINGS AND EQUIPMENT.

The University occupies thirty-three buildings, a birds-eye view of which is given on another page. Several of these buildings are utilized entirely or in part, for the School of Medicine. The various scientific laboratories and museums are well equipped, and afford valuable opportunity for study in sciences collateral to Medicine.

Athletics, debating, and other phases of student activity in the University form another important addition to the educational facilities usually provided by an isolated medical school. With the consent of the Dean, medical students may take any accessory work offered in other departments of the University. All departments are open alike to men and women.

# SCHOOL OF MEDICINE.

## HISTORICAL.

The Medical Department of Kemper College ("McDowell Medical College"), founded in St. Louis in 1840, was the first medical school established west of the Mississippi river. In 1845, this school became the Medical Department of the University of Missouri. Shortly before the Civil War, however, it was discontinued; but was re-established in Columbia in December, 1872.

The curriculum was at first only two years in length, but was extended to three years in 1891, and to the full four years in 1899.

Owing to the limited clinical facilities in Columbia, however, the last two (clinical) years of the medical curriculum have been temporarily suspended. This portion of the work will be resumed as soon as it is practicable to establish it with adequate clinical facilities. In the meantime, the first two years of the medical curriculum will be continued at Columbia and still further strengthened. On the completion of this work, a certificate is given which will admit the student to advanced standing with full credit in the foremost Medical Schools, where the clinical work of the last two years may be completed.

## POLICY.

The School of Medicine has always stood for the highest standards of medical education, and was a pioneer in introducing and developing the laboratory method. Laboratory work in Anatomy, Chemistry, and Microscopy was required of students from the date of re-establishment in 1872. A few years later, laboratory work in Pathology and in Physiology was added, and in 1891 the laboratories of Histology and Bacteriology were established. The Medical School of the University of Missouri was also one of the first schools to establish these fundamental medical sciences on a University basis, by placing them in charge of specialists who are not allowed to practice medicine, but devote their time exclusively to teaching and investigation.

## PURPOSE.

The aim of the School of Medicine is threefold:

(1) To give a thorough laboratory training in those scientific subjects which are fundamental to Medicine and form an indispensable preparation for the clinical work.



(2) To contribute to the advancement of Medicine by original investigation in the various sciences upon which modern medicine is based.

(3) To promote the diffusion of medical knowledge among the citizens of the State by Extension Work, especially through the medical profession. In this connection, the Department of Pathology and Bacteriology has recently undertaken the examination of specimens sent in by the physicians of the State for purposes of diagnosis and prevention of disease. Special circulars explaining this work will be sent upon application.

#### REQUIREMENTS FOR ADMISSION.

The University of Missouri has always stood firmly for a high standard of preliminary education for medical students. It was among the first schools to require the completion of a High School course, and was later one of the first to require in addition the completion of one year of college work before admission to the Medical School. It is now widely recognized that a High School course alone is insufficient training in preparation for the difficult work in the modern medical curriculum. While for the present session only one year of college work is required, it is strongly recommended that two years' college work preparatory to Medicine be taken, as outlined under the Combined Course.

The entrance requirements for the regular (two years) curriculum in Medicine include: (a) The completion of an approved four years' High School course; or the equivalent of 15 units work, of which at least 3 units must be in English, 1 in Algebra, 1 in Plane Geometry, and 2 in Latin. The remaining 8 units may be chosen from the following list of subjects: English, Algebra, Geometry, Trigonometry, History, Civil Government, Latin, Greek, German, French, Spanish, Physics, Chemistry, General Biology, Zoology, Botany, Drawing, Physiography, Physiology, Agriculture and Manual Training. A detailed description of the work required for credit in each of these subjects is given on pp. 66-78 of the General Catalogue of the University.

(b) One year of college work as follows: English, 5 hours; German, 5 hours; General Zoology, 5 hours; General Physics, 5 hours; Inorganic Chemistry, 5 hours. Equivalent work in foreign language may be substituted for the English and German. A student who lacks a part of the college work required for entrance may be admitted to the School of Medicine upon condition that he register for this work in the College of Arts and Science. He may then take in addition such of the first year's work in Medicine as does not conflict with the work required for entrance.



MEDICAL LABORATORY BUILDING



PARKER MEMORIAL HOSPITAL

The requirements for admission to the Combined Course in Medicine and in Arts and Science are those outlined under (a). A student who has completed (a), but not the college work required for admission to the regular Medical curriculum, may therefore get this required college work by taking the first year of the Combined Course.

*Notice. Beginning September 1, 1910, the entrance requirements for the School of Medicine will be extended to the equivalent of two years (60 hours) of college work, including the subjects above specified.*

### SPECIAL STUDENTS.

Students who are not candidates for the degree may be admitted to the School of Medicine without passing the regular examinations required for entrance, under the following conditions: (1) They must be at least 21 years of age; (2) They must show good reasons for not taking a regular course; (3) They must pass such examinations or other tests as shall demonstrate fitness to pursue profitably the subjects selected by them; (4) Such students are expected to do specially good work in the subjects which they choose. If at any period of the session the work becomes unsatisfactory, their connection with the University shall be severed by the Dean. Entrance cards for special students are issued by the Dean, and approved by the professors of the subjects taken.

### ADVANCED STANDING.

Every applicant for advanced standing is required to present credentials from an accredited college showing satisfactory completion of courses equivalent to those for which he seeks credit. Moreover, the usual entrance requirements to the first year class must be satisfied, and evidence of a good moral character must be presented to the Dean of the School of Medicine.

### FEES AND EXPENSES.

The University of Missouri offers a thorough medical education at a very low cost. The total necessary expenses need not exceed \$200 a year. The tuition fee is \$10 a semester or \$20 a year. The additional fees required are a library and incidental fee of \$10 a year and laboratory fees amounting to about \$40 a year. The total fees thus amount to about \$70 a year. The fees for the pre-medical collegiate work (first two years of the Combined Course) taken in the College of Arts and Science, are still lower. Here the only

fees are a library and incidental fee of \$10 a year, and small laboratory fees averaging about \$15 a year. For students who are non-residents of Missouri, however, an additional tuition fee of \$10 a semester, or \$20 a year, is required in the College of Arts and Science.

*Every student who applies for admission to the University after the first week of the semester in which he seeks admission shall pay a fee of \$5 for late registration, in addition to the fees already provided for. No student shall receive credit who enters later than October 15, except by special permission.*

The two Dormitories for men, Benton Hall and Lathrop Hall, lodge 140 students. Meals are furnished by the University Dining Club, in Lathrop Hall. Its capacity reaches 400. The cost of table board in this Dining Club has not exceeded \$2.00 a week. The cost of room rent, board, lights, and laundry to a student living in a dormitory, and taking his meals in the University Dining Club need not exceed \$3 a week. Board and lodging may also be obtained in private families and clubs at from \$3 to \$5 a week. For women, especial advantages are offered in Read Hall (see University catalogue).

Applications for rooms in Benton Hall, Lathrop Hall, or Read Hall should be made promptly to the "Secretary of the University," for all rooms in these halls are always engaged before the opening of the session, and rooms are allotted to applicants in the order of their applications. In order to reserve a room, it is necessary to make a deposit of \$5, which is credited on the room rent when paid.

Books and stationery are supplied at low rates by the students' Co-operative Store, and may be estimated at \$25 a year.

Many medical students support themselves wholly or in part by work of various kinds. The Young Men's Christian Association of the University, which will have quarters in the new Student Building erected at a cost of \$50,000, has an employment bureau which renders to those desiring it valuable assistance in finding work.

## BUILDINGS AND EQUIPMENT.

### 1. Medical Laboratory Building.

This is a new stone and brick building (see cut), 48x150 feet, three stories high, with a special system of steam heating and forced ventilation. It was specially designed for the Medical Laboratories, and is splendidly equipped to meet the needs of modern laboratory instruction and research. The following is a brief list of the various rooms and equipment in this building.



The department of Anatomy and Histology occupies (1) a large dissecting room, well lighted and ventilated, with dissecting tables, students' lockers, display cases for specimens, models, etc.; (2) an advanced anatomical laboratory, specially equipped for the study of Topographic Anatomy, including serial sections through formalin-hardened bodies; (3) histological laboratory (with preparation and store-room in connection), thoroughly equipped with lockers, tables, microscopes, microtomes, and other apparatus for instruction and research in microscopic work; (4) lecture room for Anatomy and Histology, equipped with Auzoux manikin, projection apparatus, charts, etc.; (5) Museum room, containing a large number of models and specimens in human anatomy; (6) professor's office and research laboratory; (7) embalming and cold storage rooms, with an abundance of well-preserved cadavers for the work in dissection.

The department of Physiology, Physiological Chemistry, and Pharmacology occupies the following rooms: (1) A large laboratory (with adjoining store-room) equipped with tables, lockers, and sets of apparatus for the students in Physiology and Pharmacology; (2) a blood-pressure room, particularly for mammalian experiments; (3) a research laboratory, thoroughly equipped, for advanced students in Physiology and Pharmacology; (4) professor's office, with adjacent research laboratory; (5) professor's office and research laboratory in Physiological Chemistry; (6) large students' laboratory, with adjacent store-room, thoroughly equipped for work in Physiological Chemistry; (7) animal room; (8) mechanic's shop; (9) lecture room (in common with Pathology).

The department of Pathology and Bacteriology occupies (1) a large students' laboratory for Bacteriology and Pathological Histology, well equipped with lockers, microscopes with oil immersion lenses, etc.; (2) a preparation room for Bacteriology, with sterilizers, incubators, etc.; (3) professor's office, with adjacent private laboratory splendidly equipped for research work in Pathology; (4) large room for autopsies and work in gross Pathology; including a collection of pathological specimens in glass cases; (5) an animal room and store-room; (6) office and research laboratory for Bacteriology; (7) lecture-room (in common with Physiology).

#### MEDICAL LIBRARY.

No Medical School of today can be considered well equipped without a good library. The Medical Library is placed in a room on the upper floor of the Medical Laboratory Building, and is open six hours daily, except Sunday. It contains about 3,500 bound



volumes, and a large number of pamphlets. The principal medical works of reference are included and the leading medical periodicals of the world (nearly 100 in number) are received regularly and placed on file. Complete sets of most of these journals are available. The main University Library also contains many works of interest and value to the medical sciences.

The following list includes the more important medical periodicals in the Library. Biological, zoological, chemical and veterinary journals, society reports, transactions, etc., are not included in the list. A complete list of the scientific periodicals in the University Library will be furnished by the University Librarian upon request. *These journals as well as other books in the Library will be loaned free to any reputable physician of the State.*

American journal of anatomy.

American journal of medical sciences.

American journal of obstetrics.

American journal of physiology.

American medical association, Journal.

Anatomische hefte.

Anatomical record.

Anatomischer anzeiger.

Annales de gynécologie et d'obstetrique.

Annales de l'institut Pasteur.

Annals of gynecology.

Annals of surgery.

Archiv für anatomie und physiologie.

Archiv für entwicklungsmechanik der organismen.

Archiv für experimentelle pathologie und pharmakologie.

Archiv für gesammte physiologie.

Archiv für gynaekologie.

Archiv für kinderheilkunde.

Archiv für microscopsche anatomie.

Archiv für ophthalmologie.

Archiv für pathologische anatomie und physiologie.

Archives internationales de pharmacodynamie et de therapie.

Archives internationales de physiologie.

Archives of ophthalmology.

Archives of otology.

Archivio di fisiologia.

Beiträge zur chemischen physiologie und pathologie.

Beiträge zur geburtshilfe und gynaekologie.

Beiträge zur pathologischen anatomie.

Bericht über die fortschritte der anatomie und physiologie.



BIRDS-EYE VIEW OF THE





UNIVERSITY OF MISSOURI

Berliner klinische wochenschrift.  
 Biometrika.  
 Boston medical and surgical journal.  
 British medical journal.  
 Cellule (La.).  
 Centralblatt für allgemeine pathologie und pathologische anatomie.  
 Centralblatt für innere medicin.  
 Centralblatt für bakteriologie.  
 Centralblatt für die medicinischen wissenschaften.  
 Centralblatt für physiologie.  
 Deutsche medicinische wochenschrift.  
 Deutsches archiv für klinisches medicin.  
 Index medicus.  
 Jahresbericht über die fortschritte auf dem gebiet der geburtshilfe  
 und gynaekologie.  
 Jahresbericht über die fortschritte in der lehre von den pathogenen  
 mikro-organismen.  
 Jahresbericht über die fortschritte der anatomie und entwicklungsgeschichte.  
 Jahresbericht über die fortschritte der physiologie.  
 Johns Hopkins hospital, Bulletin and Reports.  
 Journal de physiologie et de pathologie générale.  
 Journal of anatomy and physiology.  
 Journal of comparative neurology and psychology.  
 Journal of experimental medicine.  
 Journal of hygiene.  
 Journal of infectious diseases.  
 Journal of medical research.  
 Journal of nervous and mental diseases.  
 Journal of morphology.  
 Journal of obstetrics and gynaecology of the British empire.  
 Journal of pathology and bacteriology.  
 Journal of physiology.  
 Lancet (London).  
 Medical record.  
 Missouri state medical association, Journal.  
 Morphologische arbeiten.  
 Münchener medicinsche wochenschrift.  
 N. Y. medical journal.  
 Skandinavisches archiv für physiologie.  
 Zeitschrift für allgemeine physiologie.  
 Zeitschrift für fleisch und milchhygiene.  
 Zeitschrift für geburtshilfe und gynaekologie.

Zeitschrift für hygiene und infectionskrankheiten.

Zeitschrift für klinisches medicin.

**2. Animal House.**

During the past year an animal house has been erected near the Medical Laboratory Building. It is a brick structure, well lighted, heated and ventilated, with plumbing and other conveniences. This building provides excellent facilities for rearing and preserving animals, and for investigations in the various lines of medical science. It is of especial value for the work in Experimental Physiology, Pathology and Bacteriology.

**3. Chemistry Building.**

The Chemistry Building (see cut) is a large brick building, two stories and basement, located on the University Campus and used in common by the Medical Department and other Departments of the University. It contains several large laboratories and lecture rooms, with many smaller rooms for various purposes. The building is thoroughly equipped with facilities for instruction and investigation in Inorganic, Organic and Physical Chemistry, including Qualitative and Quantitative Analysis.

**4. Museum Building.**

The Museum Building (see cut) is also a large brick building on the University Campus and devoted primarily to Zoology and Geology. In the department of Zoology, the Medical students receive instruction in Embryology, a large well equipped laboratory, with lecture room, museum, etc., being available for this purpose. Courses in Comparative Anatomy, Cytology, etc., are also elective to Medical students.

**5. Other Buildings.**

In several other buildings on the University campus instruction is offered in many lines open to Medical students as electives, and of especial service to those taking the Combined Course in Medicine and in Arts and Science. The Gymnasium and Athletic grounds are open for the use of all students, and special opportunities are offered to those interested.

**THE PARKER MEMORIAL HOSPITAL.**

**Officers.**

GUY L. NOYES, M. D. ....	Superintendent
RUSKIN LHAMON .....	Intern
JAMES C. HAWKINS .....	Intern
WALTER McNAB MILLER, M. D. ....	Pathologist
EDWIN H. SCHORER, M. D. ....	Bacteriologist
JOSEPHINE SHIELDS	

Head Nurse and Principal of Training School for Nurses



By the gift of Wm. L. Parker, the University is supplied with an excellent Hospital, which has now been in operation for six years. In the words of the donor, it is "for the benefit of the Medical Department." This building (see cut) is a handsome, modern structure conveniently located on high ground at the west side of the Campus. The building is heated by steam, lighted by gas and electricity, and well ventilated. The Hospital has beds and accommodations for about 45 patients. It is supplied with a modern equipment in the Medical and Surgical appliances which contribute to the comfort and welfare of the patients.

An Amphitheatre adjoining the Hospital has been provided by the gift of Adolphus Busch, of St. Louis. It has a seating capacity of about one hundred, is supplied with accessory rooms for sterilizing, anaesthetizing, etc., and has a number of additional rooms for special work. The interior of the Amphitheatre has recently been equipped with the various medical and surgical accessories.

The Parker Memorial Hospital is owned and controlled by the University primarily for the benefit of the University students. It is also open to the sick of Missouri for the treatment of accidents, of acute and subacute diseases, and of chronic curable diseases. Cases of contagious diseases are not admitted.

For University students who may desire to enter the Hospital, special rates are given upon application to the Superintendent of the Hospital. A limited number of patients from outside the University will also be admitted, the rates in the wards being \$10 a week and upward, and in a private room \$15 a week and upward. These rates include board and ordinary nursing, but do not include medical and surgical attendance.

While no clinics are held at present, the Hospital is nevertheless of benefit to the Medical School in various ways. Material from the Hospital is utilized for the work in Pathology, Bacteriology, Physiological Chemistry, Clinical Microscopy, etc. Moreover, lectures upon Medical topics will be given in the Hospital for Medical students.

#### ROLLINS SCHOLARSHIP.

The Rollins Scholarship in the School of Medicine is a prize of fifty dollars, which is awarded to that member of the Junior (Third Year of Combined Course) class who has made the best record during the course.

# MEDICAL CURRICULUM

Subject	Character of Course	Semester Credits		Total Hours	
		I	II	Lecture	Laboratory
FIRST YEAR					
Osteology . . . . .	3 hrs. recitation a week . . . . .	3	—	48	—
Neurology . . . . .	1 lecture, 5 hrs. laboratory a week . . . . .	—	3	16	80
Dissection . . . . .	7½ hrs. laboratory a week . . . . .	3	3	—	240
Normal Histology . . . . .	1 lecture, 7½ hrs. laboratory a week . . . . .	4	4	32	240
Organic Chemistry . . . . .	2 lectures, 2½ hrs. laboratory a week . . . . .	3	3	64	80
Embryology . . . . .	1 lecture, 5 hrs. laboratory a week . . . . .	—	3	16	80
Bacteriology . . . . .	7½ hrs. laboratory a week . . . . .	3	—	—	120
Total . . . . .		16	16	176	840
SECOND YEAR					
Advanced Dissection . . . . .	7½ hrs. laboratory a week . . . . .	3	—	—	120
Topographic Anatomy . . . . .	7½ hrs. laboratory a week . . . . .	—	3	—	120
Physiology and Physiological Chemistry . . . . .	5 lectures, 12½ hrs. laboratory a week . . . . .	10	—	80	200
Pharmacology . . . . .	2 lectures, 5 hrs. laboratory a week . . . . .	—	4	32	80
General Pathology . . . . .	3 lectures, 2½ hrs. laboratory a week . . . . .	4	—	48	40
Special Pathology . . . . .	4 lectures, 10 hrs. laboratory a week . . . . .	—	8	64	160
Hygiene . . . . .	3 lectures a week . . . . .	—	3	48	—
Total . . . . .		17	18	272	720

The work above outlined in the regular medical curriculum provides a thorough training in the various subjects usually included in the first two years of Medicine. It meets the requirements of the Association of American Medical Colleges (of which this School is a member) and of the ideal courses in the laboratory subjects recommended by the Council on Medical Education of the American Medical Association.

### **MEDICAL CERTIFICATE.**

On completing the work outlined in the regular medical curriculum, the student is awarded a Medical Certificate at the following Commencement. This Certificate will admit him, with full credit for the first two years of Medicine to the leading medical schools where abundant clinical facilities are available for the last two years' work. Care should be taken, however, to meet the detailed entrance requirements for the particular school chosen.

There is no disadvantage in thus changing to a new place for the clinical work, for there is a natural break in the medical curriculum at this time. Reason and experience agree that the first two years should be devoted exclusively to the fundamental medical sciences. For this work, thoroughly equipped laboratories are necessary. The student is unprepared for clinics, which at this time are apt even to constitute a harmful distraction. At the beginning of the third year, however, the medical student enters upon his clinical work, a new phase of the subject with different teachers, whether in the same or a different school. Several of the leading universities thus find it best to separate the medical curriculum into two parts, giving the first two years laboratory work at the seat of the University and the last two years of clinical work in a larger city.

### **COMBINED COURSE IN MEDICINE AND IN ARTS AND SCIENCE.**

It is the policy of the School of Medicine to encourage in every way possible the gaining of a liberal education as a sound preparation for the professional study of Medicine. In several States, the law requires that all who apply for license to practice Medicine must have taken one or two years of the pre-medical collegiate work. Students of Medicine are therefore strongly urged to take a general scientific course in conjunction with their work in Medicine.

Students may, by proper choice of electives in the College of Arts and Science, do the two years' work in Medicine, and at the

same time meet the requirements for the degree of Bachelor of Arts. This, it is true, prolongs the course to at least four years, but the greater power and broader training acquired makes a better and more successful physician. Such students are registered during the first two years in the College of Arts and Science only. *During the last two years, however, they must register both in the School of Medicine and in the College of Arts and Science and must meet the requirements of both.* Combined course students are recommended to elect subjects required, or which lead up to subjects required in Medicine, in approximately the order suggested by the following tabulated statement. The work outlined for the first year includes all the college work now required for admission to the regular medical curriculum. The work outlined for the first and second years includes all the college work which will be required for entrance to the regular medical curriculum after September, 1910.

The entrance requirement for the combined course outlined below is that specified for the College of Arts and Science, i. e., a high school course equivalent to fifteen units, as explained in the general University catalogue. A student who follows this course, will, at the end of four years, have completed the requirements for the A. B. degree, provided that five hours of the electives be chosen from work "for undergraduates and graduates" in the Biological Sciences. He will also have completed the two years' work in Medicine, and will require only two years more (or six years in all) for the M. D. degree. Students who wish to do more than the required amount of pre-medical collegiate work may extend the time to the amount desired. All students who contemplate taking this course should consult the Committee on Combined Course (at present Professor Jackson).

COMBINED COURSE IN ARTS AND MEDICINE RECOMMENDED  
BY THE MEDICAL FACULTY.

<i>First Year.</i>	1st Semester	2d Semester
	Hrs. Credit	Hrs. Credit.
English (or German) .....	5	0
German (or English) .....	0	5
General Zoology .....	5	0
Theory of Evolution (Zoology 2a) .....	1	0
Chemistry, Inorganic and Qualitative Analysis .....	5	5
General Physics (2b) .....	0	6
Physical Training or Military Science....	0	0
	—	—
	16	16

*Second Year.*

Chemistry, Organic .....	3	3
Embryology of Vertebrates .....	0	3
History (or Ancient Language)* .....	0	5
Ancient Language (or History)* .....	5	0
Psychology* .....	5	0
Physical Training or Military Science ...	1	1
Elective .....	3	5
	—	—
	17	17

*Third Year.*

Osteology .....	3	0
Neurology .....	0	3
Dissection .....	3	3
Normal Histology .....	4	4
Bacteriology .....	3	0
Hygiene .....	0	3
Physical Training or Military Science..	1	1
Elective .....	3	3
	—	—
	17	17

*Fourth Year.*

Physiology and Physiological Chemistry	10	0
Pharmacology .....	0	4
Pathology, General and Special .....	4	8
Advanced Dissection .....	3	0
Topographic Anatomy .....	0	3
Elective .....	0	3
	—	—
	17	18

\*NOTE. When a prescribed minimum amount of High School work in corresponding subjects has been offered for entrance, other subjects may be substituted for those indicated.

## COURSES IN DETAIL.

Courses designated by a number with the letter a attached, thus: 4a, are given the first semester only. Those designated by a number with the letter b attached, thus: 4b, are given the second semester only. Those designated merely by a number are continuous courses and are given both semesters. The Arabic numerals in parenthesis indicate the number of hours credit a week. For the courses in the first two years of the Combined Course, consult the general University catalogue.



## ANATOMY AND HISTOLOGY.

Professor JACKSON; Assistant Professor BELL; Mr. LOWREY.

2a. **Osteology.** Recitations and Demonstrations. A complete disarticulated human skeleton is issued to every two students for use during this course. Fee for use of skeleton, \$2; deposit of \$10 required. T. Th. S., at 8. *First Year.* (3).

3. **Normal Histology.** A study of the microscopic anatomy of the body. Each student prepares, stains and mounts permanently about 100 specimens for study. Laboratory fee, \$3.50 each semester. One lecture and three laboratory periods a week. T. Th., 8-10; 11-1. *First Year.* (4).

4. **Dissection.** The upper and lower extremities are dissected in the first semester; the thorax and abdomen in the second. Laboratory fee, \$4.50 each semester. Laboratory, M. W. F., 2-4:30. *First Year.* (3).

5b. **Neurology.** A study (gross and microscopic) of the central nervous system and sense organs. A complete set of mounted serial sections through a human brain stem, together with numerous specimens, models, charts, etc., are available for this course. Laboratory, with one lecture a week. Laboratory fee, \$3.50. M. W. F., 8-10. *First Year.* (3).

6a. **Advanced Dissection.** Dissection of the head and neck. Laboratory fee, \$4.50. Laboratory, M. W. F., 2-4:30. *Second year.* (3).

7b. **Topographic Anatomy.** A study of the topography of the various organs by means of serial sections through the entire body. Laboratory fee, \$4.50. Laboratory, M. W. F., 2-4:30. *Second year.* (3).

8. **Advanced Human Embryology.** Based upon a study of human and mammalian embryos of various ages. A large collection of human embryos, many of which have been cut in serial sections, is available for this course. Hours to be arranged. *Elective.*

9. **Advanced Anatomy.** Advanced work in Anatomy or Histology, the character of which may be varied to suit individual needs. In connection with this course, a seminary is held once a week (which may be taken separately if desired), at which current literature and results of research work in progress are reported. Hours to be arranged. *Elective.*

10. **Research.** Opportunity is afforded to a limited number of properly qualified students for original investigation in Anatomy or Histology. A reading knowledge of German and French is essential. Hours to be arranged. *Elective.*

## PHYSIOLOGY AND PHARMACOLOGY.

Professor GREENE; Assistant Professor GIBSON; MR. ALFORD.

**2a. Experimental Physiology.** The physiology and physiological chemistry of the proteins; of muscle, nerve and connective tissue; of blood, secretions, digestion, absorption, intermediary metabolism and excretions; of nutrition, heat production, and heat regulation. A metabolism experiment with a complete quantitative examination of the urine is required. Laboratory fee \$4.00. Lectures, T. Th. at 8; Laboratory, T. Th. 9-10; 11-12:30. *Second year.* (4).

**3a. Experimental Physiology.** The physiology of muscle and nerve, circulation, respiration, nervous system, and sense organs. Laboratory fee \$6.00. Lectures, M. W. F., at 8; Laboratory, M. W. F., 9-10; 11-12:30. *Second year.* (6).

**4b. Physiological Chemistry.** An advanced course supplementing and extending course 2a. The preparation and chemistry of the proteins. A qualitative, and to some extent quantitative study of the tissues and secretions, of enzymes, and of putrefactive products; analysis of foods and food preservatives. The carrying out of a short investigation and formal report on the same is required. Laboratory fee \$5.00. *Elective.* (4).

**5b. Experimental Pharmacology.** This course presents the physiological action of drugs. The laboratory tests are arranged by groups so that students may observe the results of a wide range of experiments, the demonstrations being made on man and the lower animals. Laboratory fee \$5.00. Lectures, T. Th. at 8; Laboratory, T. Th. 2-4:30. *Second year.* (4).

**6b. General and Comparative Physiology.** The phenomena of irritability; the effects of chemico-physical forces upon the physiological processes of protoplasm. Introductory courses in Physiology and Zoology are required. Laboratory fee \$2.00 or \$4.00. *Elective.* (2) or (3).

**7a or 7b. Toxicology.** Laboratory fee \$2.00 or \$4.00. *Elective.* (2) or (3).

**8. Journal Club.** *Elective.* (1).

**9a. The Pharmacology of the Circulatory System.** Laboratory fee \$4.00. *Elective.* (3).

**10. Advanced Physiology.** Advanced courses in Physiology, Pharmacology, and Physiological Chemistry. Individual problems

will be assigned to students of sufficient preparation. Laboratory fees and credits to be arranged. *Elective.*

11. **Investigation.** Opportunity is offered for research into questions of current interest. *Elective.*

## **PATHOLOGY, BACTERIOLOGY AND HYGIENE.**

Professor MILLER; Assistant Professor SCHORER; DR. MITCHELL.

1. **Pathology, General and Special.** The conduct of the necropsy, macroscopic, microscopic, bacteriologic, experimental writing of protocol. This work includes the study of degeneration, regeneration, inflammation, the effects of poisons, the infections, animal parasites, and tumors. When the work of the student is not directed to the post-mortem examination or demonstration of gross material, about five microscopic sections are given daily to the students for staining, mounting, and study. These preparations have a permanent value and become the property of the student. Laboratory fee for first semester, \$5; second semester, \$10. *Three lectures and one laboratory period, first semester. (4). Four lectures and four laboratory periods second semester. (8). Second year.*

2. **Pathology, Research Work.** *Elective.*

3a. **Bacteriology: General, Medical and Sanitary.** A laboratory and lecture course to give the student a comprehensive view of the whole field of bacteriology and parasitology. The student prepares media, and learns the principles of sterilization, disinfection, isolation, cultivation, staining and identification of bacteria. Pathogenic protozoa and other parasites are also considered. Laboratory fee \$10. M. F., 11-1; W., 9-1. *First year. (3)*

4. **Bacteriology, Research Work.** *Elective.*

5b. **Hygiene.** Lectures on the following subjects: History of Hygiene; general hygiene of cities, dwellings, schools, prisons, etc.; commercial hygiene; ways in which important diseases spread, and the means of preventing epidemics; vaccination; disinfection with special reference to households and schools; quarantines; organization of boards of health in different countries; value of compulsory registration, vital statistics, etc. Lectures. M. W. F., 12-1. *Second year. (3).*

7. **Seminary.** Elective for advanced students and graduates. Twice a month.

## CHEMISTRY.

Professor CALVERT.

11. **Organic Chemistry.** The aim of this course is to give a general survey of the principal classes of organic compounds, such as hydrocarbons, alcohols, phenols, ethers, aldehydes, acids, esters, fats, carbohydrates, etc. In so far as it is possible, the student prepares in the laboratory representatives of the various classes of compounds and studies their reactions. Laboratory fee \$5. Lecture, F., 10; Laboratory, T. Th., 2-4:30. *First year.* (3).

For other courses in Chemistry which are given in the College of Arts and Science and which may be elected, see general Catalogue of the University.

## ZOOLOGY.

Professor LEFEVRE; Mr. TANNREUTHER.

4b. **Embryology of Vertebrates.** The course is designed to lay the foundation of vertebrate embryology. In the laboratory the development of the chick and pig is carefully studied from preparations of entire embryos and from sections. These observations are used as a basis of comparison for the study of human embryology. Laboratory fee \$5. Lectures and Laboratory, M. W. F., 11 to 1. *First year.* (3).

**Electives.** Courses in Comparative Anatomy of Vertebrates and Cytology may be elected by students in the School of Medicine who are prepared to pursue them. See announcement of the College of Arts and Science in the general University Catalogue.

For further information concerning the Medical Department, address

C. M. JACKSON, M. D., Dean,  
Columbia, Mo.

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1910/11  
VOL. XI, No. 6

JUNE, 1910

BULLETIN OF THE UNIVERSITY OF MISSOURI

# SCHOOL OF MEDICINE

OF THE

UNIVERSITY OF MISSOURI

COLUMBIA, MISSOURI



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ANNOUNCEMENT

1910-11

Published monthly by the University of Missouri. Entered April 12, 1902, at Columbia, Missouri, as second-class matter, under Act of Congress of July 16, 1894.



## UNIVERSITY CALENDAR, 1910-11.

- 1910—September 19, 20, 21..Entrance Examinations and Registration  
September 22, Thursday, at 8 a. m.....Class Work Begins  
September 22, Thursday at 10 a. m.....Opening Convocation  
November 23, Wednesday at 12 m. to  
November 28, Monday at 8 a. m.....Thanksgiving Holidays  
December 22, Thursday at 4 p. m. to
- 1911—January 3, Tuesday at 8 a. m.....Christmas Holidays  
January 23 to February 4.....Mid-Year Examinations  
February 6, Monday at 8 a. m.
- Class Work for Second Semester Begins  
February 22 ..... Holiday  
May 27 to June 3 .....Final Examinations  
June 8, Thursday .....Commencement Day

## MEDICAL FACULTY.

ALBERT ROSS HILL, A. B., Ph. D., LL. D.,

*President of the University.*

CLARENCE MARTIN JACKSON, B. S., M. S., M. D.,

*Professor of Anatomy and Histology, and Dean of the Faculty.*

ANDREW WALKER McALESTER, A. M., M. D., LL. D.,

*Emeritus Professor of Surgery.*

WOODSON MOSS, M. D., LL. D.,

*Professor of Medicine.*

WILLIAM GEORGE BROWN, B. S., Ph. D.,

*Professor of Technical Chemistry.*

GEORGE LEFEVRE, A. B., Ph. D.,

*Professor of Zoology.*

CHARLES WILSON GREENE, A. B., A. M., Ph. D.,

*Professor of Physiology and Pharmacology.*

\*WALTER McNAB MILLER, B. S., M. D.,

*Professor of Pathology and Bacteriology.*

GUY L. NOYES, M. D.,

*Superintendent of the Parker Memorial Hospital.*

SIDNEY CALVERT, B. Sc., A. M.,

*Professor of Organic Chemistry.*

DAVID HOUGH DOLLEY, A. M., M. D.,

*Professor of Pathology and Bacteriology.*

ROBERT BANKS GIBSON, Ph. B., Ph. D.,

*Assistant Professor of Physiological Chemistry and Pharmacology.*

ELEXIOUS THOMPSON BELL, B. S., M. D.,

*Assistant Professor of Anatomy.*

CAROLINE MCGILL, A. B., A. M., Ph. D.,

*Instructor in Anatomy.*

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\*Resigned.

OLIVER WENDELL HOLMES MITCHELL, M. D.,  
*Instructor in Pathology and Bacteriology.*

GEORGE WASHINGTON TANNREUTHER, A. B., A. M., Ph. D.,  
*Instructor in Zoology.*

AUGUST WILLIAM KAMPSCHMIDT, A. B., M. D.,  
*Acting Instructor in Pharmacology.*

LAWSON GENTRY LOWREY, A. B., A. M.,  
*Assistant in Anatomy.*

GLORIA WASHINGTON CARR, A. B., B. S. in Ed.,  
*Assistant in Physiology.*

FLOYD AUGUST MARTIN,  
*Student Assistant in Pathology.*

EPHRAIM MACDONALD EWING, A. B., A. M.,  
*Student Assistant in Physiology.*

**THE UNIVERSITY OF MISSOURI.****GENERAL INFORMATION.**

The University of Missouri is located at Columbia, a beautiful town of about 10,000 inhabitants, on the Wabash and the Missouri, Kansas & Texas railroads. It is the oldest State University west of the Mississippi, having been founded in 1839. It includes the following Divisions: (1) Graduate Division; (2) College of Arts and Science; (3) College of Agriculture; (4) School of Education; (5) School of Law; (6) School of Medicine; (7) School of Engineering; (8) School of Journalism; (9) School of Mines (at Rolla). The total enrolment for the session 1909-10 was 2903; the enrolment in Medicine was 30. A list of the students enrolled is given in the general University catalogue. A copy of this catalogue, describing in detail the work of the various departments, will be mailed free upon application. All departments are open alike to men and to women.

**INCOME.**

The income of the University of Missouri, from the State and the United States Government, is about \$600,000 a year. As an integral part of the University, the School of Medicine is supported from this income. As a result, a most thorough course of instruction with the highest standards of scholarship has been established and maintained. It cannot be too strongly emphasized that this is impossible in a medical school which depends solely upon students' fees for support. Modern medical education is very costly, and cannot be properly given without generous support from public or private endowment.

**SCHOOL OF MEDICINE.****HISTORICAL.**

The Medical Department of Kemper College ("McDowell Medical College"), founded in St. Louis in 1840, was the first medical school in operation west of the Mississippi river. In 1845, this school became the Medical Department of the University of Missouri. Shortly before the Civil War, however, it was discontinued; but was re-established in Columbia in December, 1872.

The curriculum was at first only two years in length, but was extended to three years in 1891, and to the full four years in 1899. Owing to the limited clinical facilities in Columbia, however, the

last two (clinical) years of the medical curriculum have been temporarily suspended. This portion of the work will be resumed as soon as it is practicable to establish it with adequate clinical facilities. In the meantime, the first two years of the medical curriculum will be continued at Columbia and still further strengthened. On the completion of this work, a certificate is given which will admit the student to advanced standing with full credit in any of the foremost Medical Schools in America, where the clinical work of the last two years may be completed.

#### POLICY.

The School of Medicine has always stood for the highest standards of medical education, and was a pioneer in introducing and developing the laboratory method. Laboratory work in Anatomy, Chemistry, and Microscopy was required of students from the date of re-establishment in 1872. A few years later, laboratory work in Pathology and in Physiology was added, and in 1891 the laboratories of Histology and Bacteriology were established. The Medical School of the University of Missouri was also one of the first schools to establish these fundamental medical sciences on a University basis, by placing them in charge of specialists who are not allowed to practice medicine, but devote their time exclusively to teaching and investigation.

#### PURPOSE.

The aim of the School of Medicine is threefold:

(1) To give a thorough laboratory training in those scientific subjects which are fundamental to Medicine and form an indispensable preparation for the clinical work.

(2) To contribute to the advancement of Medicine by original investigation in the various sciences upon which modern medicine is based.

(3) To promote the diffusion of medical knowledge among the citizens of the State, especially through the medical profession. In this connection, the Department of Pathology and Bacteriology undertakes the examination of specimens sent in by the physicians of the State for purposes of diagnosis and prevention of disease. Special circulars explaining this work will be sent upon application. The Medical Library is also open for the use of non-resident physicians, and a catalog of the books and periodicals which may be borrowed will be sent free upon request.



## REQUIREMENTS FOR ADMISSION.

The University of Missouri has always stood firmly for a high standard of preliminary education for medical students. It was among the first schools to require the completion of a High School course, and was later one of the first to require in addition college work for admission to the Medical School. It is now widely recognized that a High School course alone is insufficient training in preparation for the difficult work in the modern medical curriculum. Educational authorities agree that two years of general college work is the minimum necessary as an adequate preparation for Medicine.

The entrance requirements for the regular (two years') curriculum in Medicine therefore include: (a) The completion of an approved four years' High School course; or 15 units work, of which at least 3 units must be in English, 1 in Algebra, 1 in Plane Geometry, and 2 in Latin. The remaining 8 units may be chosen from the following list of subjects: English, Algebra, Geometry, Trigonometry, History, Civil Government, Economics, Latin, Greek, German, French, Spanish, Physics, Chemistry, General Biology, Zoology, Botany, Drawing, Physical Geography, Physiology, Agriculture, Manual Training, Domestic Science and Music. A detailed description of the work required for credit in each of these subjects is given on pp. 71-82 of the General Catalogue of the University.

(b) Two years of college work (equivalent to 60 hours credit in the College of Arts and Science) as follows: English, 5 hours; German, 5 hours; General Zoology, 5 hours; General Physics, 5 hours; Inorganic Chemistry, 5 hours; Elective, 35 hours. Equivalent work in foreign language may be substituted for the English and German. A student who lacks a small part of the college work required for entrance may be admitted to the School of Medicine upon condition that he register for this work in the College of Arts and Science. He may then take in addition such of the first year's work in Medicine as does not conflict with the work required for entrance.

The requirements for admission to the Combined Course in Medicine and in Arts and Science are those outlined under (a). A student who has completed (a), but not the college work required for admission to the regular Medical curriculum, may therefore get this required college work by entering the Combined Course.

## SPECIAL STUDENTS.

Students who are not candidates for the degree may be admitted to the School of Medicine without passing the regular examinations required for entrance, under the following conditions: (1) They

must be at least 21 years of age; (2) They must show good reasons for not taking a regular course; (3) They must pass such examinations or other tests as shall demonstrate fitness to pursue profitably the subjects selected by them; (4) Such students are expected to do specially good work in the subjects which they choose. If at any period of the session the work becomes unsatisfactory, their connection with the University shall be severed by the Dean.

#### ADVANCED STANDING.

Every applicant for advanced standing is required to present credentials from an accredited college showing satisfactory completion of courses equivalent to those for which he seeks credit. Moreover, the usual entrance requirements to the first year class must be satisfied, and evidence of a good moral character must be presented to the Dean of the School of Medicine.

#### FEEES AND EXPENSES.

The University of Missouri offers a thorough medical education at a very low cost. The total necessary expenses need not exceed \$200 a year. The tuition fee is \$10 a semester or \$20 a year. The additional fees required are a library and incidental fee of \$10 a year and laboratory fees amounting to about \$40 a year. The total fees thus amount to about \$70 a year. The fees for the pre-medical collegiate work (first two years of the Combined Course) taken in the College of Arts and Science, are still lower. Here the only fees are a library and incidental fee of \$5 a semester, and small laboratory fees averaging about \$15 a year. For students who are non-residents of Missouri, however, an additional tuition fee of \$10 a semester, or \$20 a year, is required in the College of Arts and Science (but not in the Medical School).

*Every student who applies for admission to the University after the first week of the semester in which he seeks admission shall pay a fee of \$5 for late registration, in addition to the fees already provided for. No student shall receive credit who enters later than four weeks after the beginning of either semester, except by special permission.*

The two Dormitories for men, Benton Hall and Lathrop Hall, lodge 140 students. Meals are furnished by the University Dining Club, in Lathrop Hall. Its capacity reaches 450. The cost of table board in this Dining Club has not exceeded \$2.00 a week. The cost of room rent, board, lights, and laundry to a student living in a dormitory, and taking his meals in the University Dining Club

need not exceed \$3 a week. Board and lodging may also be obtained in private families and clubs at from \$3.50 to \$5 a week. For women, especial advantages are offered in Read Hall (see University catalogue).

Applications for rooms in Benton Hall, Lathrop Hall, or Read Hall should be made promptly to the "Secretary of the University," for all rooms in these halls are always engaged before the opening of the session, and rooms are allotted to applicants in the order of their applications. In order to reserve a room, it is necessary to make a deposit of \$5, which is credited on the room rent when paid.

Books and stationery are supplied at low rates by the students' Co-operative Store, and may be estimated at \$25 a year.

Many medical students support themselves wholly or in part by work of various kinds. The Young Men's Christian Association of the University has an employment bureau which renders to those desiring it valuable assistance in finding work.

#### ROLLINS SCHOLARSHIP.

The Rollins Scholarship in the School of Medicine is a prize of fifty dollars, which is awarded to that member of the Junior (Third Year of Combined Course) class who has made the best record in the medical work.

#### REPORT OF THE CARNEGIE FOUNDATION.

Before describing in detail the buildings, equipment and facilities, it may be of interest to quote from a recent report of the Carnegie Foundation for the Advancement of Teaching. This elaborate report on Medical Education is based upon personal inspection and investigation of every medical school in the country. On account of the fact that the defects in the great majority of medical schools are fully and frankly criticised in this report, it will be of great value to those who desire accurate information from an unbiased source concerning the various schools. Regarding the facilities of the Medical School of the University of Missouri it states (p. 251): "*The medical department occupies a new and well equipped building, excellently adapted to its purposes. The teaching is in charge of full-time instructors of modern training and ideals. A university hospital of 45 beds gives the department the advantage of clinical material and connection, even though the actual instruction is limited to the work of the first two years, a feature of great importance. There is a library, supplied with important current periodicals, domestic and foreign.*"

A similar investigation of the various medical schools of the country has been made by the Council on Medical Education of the American Medical Association. Their rating of the various schools is published in the *Journal A. M. A.* (Vol. LIV, No. 25, June 18, 1910, p. 2061). The School of Medicine of the University of Missouri is placed in "Class A," those whose work is fully acceptable. Judged according to the record of its graduates in the examinations before the various State Licensing Boards, the University of Missouri also ranks high, being the only school in the State with less than 10 per cent of failures.

## BUILDINGS AND EQUIPMENT.

### 1. Medical Laboratory Building.

This is a new stone and brick building (see cut) 48x150 feet, three stories high, with a special system of steam heating and forced ventilation. It was specially designed for the Medical Laboratories, and is splendidly equipped to meet the needs of modern laboratory instruction and research. The following is a brief list of the various rooms and equipment in this building.

The department of Anatomy and Histology occupies (1) a large dissecting room, well lighted and ventilated, with dissecting tables, students' lockers, display cases for specimens, models, etc.; (2) an advanced anatomical laboratory, specially equipped for the study of topographic anatomy, including serial sections through formalin-hardened bodies; (3) histological laboratory (with preparation and store-room in connection), thoroughly equipped with lockers, tables, microscopes, microtomes, and other apparatus for instruction and research in microscopic work; (4) lecture room for Anatomy and Histology, equipped with Auzoux manikin, projection apparatus, charts, etc.; (5) Museum room, containing a large number of models and specimens in human anatomy; (6) research laboratory, fully equipped for investigation in Anatomy, Histology and Embryology; (7) professor's office; (8) embalming and cold storage rooms, with an abundance of well-preserved cadavers for the work in dissection.

The department of Physiology, Physiological Chemistry, and Pharmacology occupies the following rooms: (1) A large laboratory (with adjoining store-room) equipped with tables, lockers, and sets of apparatus for the students in Physiology and Pharmacology; (2) a blood-pressure room, particularly for mammalian experiments; (3) a research laboratory, thoroughly equipped, for advanced students in Physiology and Pharmacology; (4) professor's office, with adjacent research laboratory; (5) professor's office and research laboratory in

Physiological Chemistry; (6) large students' laboratory, with adjacent store-room, thoroughly equipped for work in Physiological Chemistry; (8) mechanics' shop; (9) lecture room (in common with Pathology).

The department of Pathology and Bacteriology occupies (1) a large students' laboratory for Bacteriology and Pathological Histology, well equipped with lockers, microscopes with oil immersion lenses, etc.; (2) a preparation room for Bacteriology, with sterilizers, incubators, etc.; (3) professor's office, with adjacent private laboratory splendidly equipped for research work in Pathology; (4) large room for autopsies and work in gross Pathology; including a collection of pathological specimens in glass cases; (5) an animal room and store-room; (6) office and research laboratory for Bacteriology; (7) lecture-room (in common with Physiology).

#### MEDICAL LIBRARY.

No Medical School of today can be considered well equipped without a good library. The Medical Library is placed in a room on the upper floor of the Medical Laboratory Building, and is open six hours daily, except Sunday. It contains about 4000 bound volumes, and a large number of pamphlets. The principal medical works of reference are included and the leading medical periodicals of the world (nearly 100 in number) are received regularly and placed on file. Complete sets of most of these journals are available. The main University Library also contains many works of interest and value to the medical sciences.

A catalog of the Medical Library has just been issued, which will be sent free upon request by the University Librarian. Books and periodicals will be loaned to non-resident physicians, the only cost being that for transportation. Special arrangements will also be made with County Medical Societies for local circulating medical libraries.

The following list includes the more important medical periodicals in the Library. Biological, zoological, chemical and veterinary journals, society reports, transactions, etc., are not included.

American journal of anatomy.

American journal of medical sciences.

American journal of obstetrics.

American journal of pharmacology.

American journal of physiology.

American medical association, Journal.

Anatomische hefte.



Anatomical record.  
Anatomischer anzeiger.  
Annales de gynécologie et d'obstetrique.  
Annales de l'institut Pasteur.  
Annals of gynecology.  
Annals of surgery.  
Archiv für anatomie und physiologie.  
Archiv für entwickelungsmechanik der organismen.  
Archiv für experimentelle pathologie und pharmakologie.  
Archiv für gesammte physiologie.  
Archiv für gynaekologie.  
Archiv für hygiene.  
Archiv für kinderheilkunde.  
Archiv für microscopsche anatomie.  
Archiv für ophthalmologie.  
Archiv für pathologische anatomie und physiologie.  
Archives d'anatomie microscopique.  
Archives de medicine exper. et pathol.  
Archives de parasitologie.  
Archives internationales de pharmacodynamie et de therapie.  
Archives internationales de physiologie.  
Archives of ophthalmology.  
Archives of otology.  
Archivio di farmacol. sper.  
Archivio ital. di anat. e. embryol.  
Archivio di fisiologia.  
Baumgarten's pathologische arbeiten.  
Beiträge zur chemischen physiologie und pathologie.  
Beiträge zur geburtshilfe und gynaekologie.  
Beiträge zur pathologischen anatomie.  
Bericht über die fortschritte der anatomie und physiologie.  
Berliner klinische wochenschrift.  
Bibliographie anatomique.  
Biometrika.  
Boston medical and surgical journal.  
Brain.  
British medical journal.  
Cellule (La.).  
Centralblatt für allgemeine pathologie und pathologische anatomie.  
Centralblatt für innere medicin.  
Centralblatt für bakteriologie.  
Centralblatt für die medicinischen wissenschaften.  
Centralblatt für physiologie.

Deutsche medicinische wochenschrift.  
Deutsches archiv für klinisches medicin.  
Ergebnisse der anatomie u. entwicklungsgeschichte.  
Folia neurobiologica.  
Index medicus.  
Internationale monatschrift f. anatomie.  
Jahresbericht über die fortschritte d. geburtshilfe u. gynaekologie.  
Jahresbericht über die fortschritte d. pathog. mikro-organismen.  
Jahresbericht über die fortschritte der anatomie und entw.  
Jahresbericht über die fortschritte der physiologie.  
Johns Hopkins hospital, Bulletin and Reports.  
Journal de l'anatomie et de la physiologie.  
Journal de physiologie et de pathologie généralé.  
Journal of anatomy and physiology.  
Journal of comparative neurology and psychology.  
Journal of experimental medicine.  
Journal of hygiene.  
Journal of infectious diseases.  
Journal of medical research.  
Journal of nervous and mental diseases.  
Journal of morphology.  
Journal of obstetrics and gynaecology of the British empire.  
Journal of pathology and bacteriology.  
Journal of physiology.  
Lancet (London).  
Medical record.  
Missouri state medical association, Journal.  
Morphologische arbeiten.  
Münchener medicinsche wochenschrift.  
N. Y. medical journal.  
Quarterly journal of experimental physiology.  
Revue generale d'histologie.  
Skandinavisches archiv für physiologie.  
Zeitschrift für allgemeine physiologie.  
Zeitschrift für fleisch und milchhygiene.  
Zeitschrift für geburtshilfe und gynaekologie.  
Zeitschrift für immunitätsforschung.  
Zeitschrift für krebsforschung.  
Zeitschrift für morphologie u. anthropologie.  
Zeitschrift für hygiene und infectionskrankheiten.  
Zeitschrift für klinisches medicin.  
Zentralblatt für normale anatomie.

## 2. Animal House.

An animal house has recently been erected near the Medical Laboratory Building. It is a brick structure, well lighted, heated and ventilated, with plumbing and other conveniences. This building provides excellent facilities for rearing and preserving animals, and for investigations in the various lines of medical science. It is of especial value for the work in Experimental Physiology, Pathology and Bacteriology.

### 3. Chemistry Building.

The Chemistry Building is a large brick building, two stories and basement, located on the University Campus and used in common by the Medical School and other Departments of the University. It contains several large laboratories and lecture rooms, with many smaller rooms for various purposes. The building is thoroughly equipped with facilities for instruction and investigation in Inorganic, Organic and Physical Chemistry, including Qualitative and Quantitative Analysis.

### 4. Museum Building.

The Museum Building is also a large brick building on the University Campus and devoted primarily to Zoology and Geology. In the department of Zoology, the Medical students receive instruction in Embryology, a large well equipped laboratory, with lecture room, museum, etc., being available for this purpose. Courses in Comparative Anatomy, Cytology, etc., are also elective to Medical students.

### 5. Other Buildings.

In several other buildings on the University campus instruction is offered in many lines open to Medical students as electives, and of especial service to those taking the Combined Course in Medicine and in Arts and Science. The Gymnasium and Athletic grounds are open for the use of all students, and special opportunities are offered to those interested.

## THE PARKER MEMORIAL HOSPITAL.

### Officers.

GUY L. NOYES, M. D.....	Superintendent
DAVID HOUGH DOLLEY, M. D.....	Pathologist
O. W. H. MITCHELL.....	Bacteriologist
MARGARET B. BATTSON..	Principal of Training School for Nurses
MARGARET I. JARDINE.....	Head nurse

By the gift of Wm. L. Parker, the University is supplied with an excellent Hospital, which has now been in operation for nine years. In the words of the donor, it is "for the benefit of the School of Medicine." This building is a handsome, modern structure conveniently located on high ground at the west side of the Campus. The Hospital has capacity for about 45 patients. It is supplied with modern equipment in the medical and surgical appliances which contribute to the comfort and welfare of the patients.

An Amphitheatre adjoining the Hospital has been provided by the gift of Adolphus Busch, of St. Louis. It has a seating capacity of about one hundred, is supplied with accessory rooms for sterilizing, anaesthetizing, etc., and has a number of additional rooms for special work. The interior of the Amphitheatre has recently been equipped with the various medical and surgical accessories.

The Parker Memorial Hospital is owned and operated by the University primarily for the benefit of the University students. It is also open to the sick of Missouri for the treatment of accidents, of acute and subacute diseases, and of chronic curable diseases. Cases of chronic, incurable or dangerous communicable diseases are not admitted.

For University Students who may desire to enter the Hospital special rates are given upon application to the Superintendent of the Hospital. A limited number of patients from outside the University will also be admitted. The rates in the wards are \$10 a week and upward, and in a private room \$15 a week and upward; obstetrical cases, \$25 a week. These rates include board and ordinary nursing, but do not include medical and surgical attendance. Extra fees are charged for medicines, dressings, and the use of the operating room or its equipment. Special nursing by pupil nurses may be had at the rate of \$3 a day. Fees are payable in advance.

An out-patient medical clinic is held at the Hospital daily at 4 p. m. during the school session. Students enrolled in the University of Missouri are admitted free to this clinic for examination, medical advice and treatment. At this clinic, the second year Medical students receive instruction and practice in physical diagnosis, principles of medicine, therapeutics, prescription writing, etc.

Material from the Hospital is also utilized for the laboratory work in Pathology, Bacteriology, Clinical Microscopy, etc. Moreover, Lectures and demonstrations are given from time to time for the benefit of the Medical students and the nurses in training.

## THE TRAINING SCHOOL FOR NURSES.

The School for Nurses of the University of Missouri was organized in 1901. The school is conducted in connection with the Parker Memorial Hospital.

Pupil nurses receive their training in the Hospital and laboratories of the University. Nurses have access to the libraries and museums of the University at all times.

The course of instruction is thorough and familiarizes the pupils with the theory and practice of nursing in all its details. The course covers a period of three years of twelve months each. The first three months of residence in the school are probationary and at the expiration of that time the pupil is regularly enrolled as a member of the School, provided she is found to be acceptable.

A special announcement giving detailed information concerning the Training School for Nurses will be sent in response to requests for the same, addressed to the Principal of the Training School for Nurses, Parker Memorial Hospital, Columbia, Missouri.



MEDICAL CURRICULUM

Subject	Character of Course	Semester Credits		Total Hours	
		I	II	Lecture	Laboratory
FIRST YEAR					
Dissection (incl. Osteology) . . . {	1 recitation, 12 ½ hrs. laboratory a week.....	6	6	32	400
Normal Histology... ..	1 lecture, 6 hrs. laboratory a week .....	4	4	32	192
Organic Chemistry... ..	2 lectures, 2 ½ hrs. laboratory a week. ....	3	3	64	80
Embryology..... ..	1 lecture, 5 hrs. laboratory a week .....	—	3	16	80
General Bacteriology.... {	1 lecture, 5 hrs. laboratory a week....	3	—	16	80
Total . . . . .		16	16	160	832
SECOND YEAR					
Neurology . . . . .	1 lecture, 5 hrs. laboratory a week . . . . .	—	3	16	80
Topographic Anatomy . . . . .	7 ½ hrs. laboratory a week....	—	3	—	120
Physiology and Physiological Chemistry	5 lectures, 12 ½ hrs. laboratory a week .....	10	—	80	200
Pharmacology.... ..	2 lectures, 5 hrs. laboratory a week .....	—	4	32	80
General Pathology (incl. Pathogenic Bacteria).....	2 lectures, 5 hrs. laboratory a week .....	4	—	32	80
Pathology. .... .	2 lectures, 15 hrs. laboratory a week. . . . .	—	8	32	240
Hygiene . . . . .	3 lectures a week. . . . .	—	3	48	—
Principles of Medicine.. . . .	3 clinics a week.....	1	1	0	96
Total . . . . .		18	19	240	896

The work above outlined in the regular medical curriculum provides a thorough training in the various subjects usually included in the first two years of Medicine. It meets the requirements of the Association of American Medical Colleges (of which this School is a member) and of the ideal courses in the laboratory subjects recommended by the Council on Medical Education of the American Medical Association.

#### **MEDICAL CERTIFICATE.**

On completing the work outlined in the regular medical curriculum, the student is awarded a Medical Certificate at the following Commencement. This Certificate will admit him, with full credit for the first two years of Medicine to any of the leading medical schools where abundant clinical facilities are available for the last two years' work. Care should be taken, however, to meet the detailed entrance requirements for the particular school chosen.

There is no disadvantage in thus changing to a new place for the clinical work, for there is a natural break in the medical curriculum at this time. Reason and experience agree that the first two years should be devoted to the fundamental medical sciences. For this work, thoroughly equipped laboratories are necessary. The student is unprepared for clinics, which at this time are apt even to constitute a harmful distraction. At the beginning of the third year, however, the medical student enters upon his clinical work, a new phase of the subject, with different teachers, whether in the same or a different school. Several of the leading universities thus find it best to separate the medical curriculum into two parts, giving the first two years laboratory work at the seat of the University and the last two years of clinical work in a larger city.

#### **COMBINED COURSE IN MEDICINE AND IN ARTS AND SCIENCE.**

It is the policy of the School of Medicine to encourage in every way possible the gaining of a liberal education as a sound preparation for the professional study of Medicine. In several States, the law requires that all who apply for license to practice Medicine must have taken one or two years of the pre-medical collegiate work. Students of Medicine are therefore required to take a general scientific college course as a preparation for their work in Medicine proper.

Students in the College of Arts and Science may, by proper choice of electives, do the two years' work in Medicine, and at the

same time meet the requirements for the degree of Bachelor of Arts. Such students are registered during the first two years in the College of Arts and Science only. *During the last two years, however, they must register both in the School of Medicine and in the College of Arts and Science and must meet the requirements of both.* Combined course students are recommended to elect subjects required, or which lead up to subjects required in Medicine, in approximately the order suggested by the following curriculum. In order that conflicts in time between the various subjects may be avoided, special sections for the pre-medical students have been arranged for the First Year. The work outlined for the first two years includes all the college work required for admission to the regular medical curriculum.

The entrance requirement for the combined curriculum outlined below is that specified for the College of Arts and Science, i. e., a high school course equivalent to fifteen units, as explained in the general University catalogue. A student who follows this curriculum will, at the end of four years, have completed the requirements for the A. B. degree, provided that two hours of the electives be chosen from work "for undergraduates and graduates" in the Biological Sciences. He will also have completed the two years' work in Medicine, and will require only two years more (or six years in all) for the M. D. degree. Students who wish to do more than the required amount of pre-medical collegiate work may extend the time to the amount desired. All students who contemplate taking this course should consult the Committee on Combined Curriculum (at present Professor Jackson).

CURRICULUM LEADING TO THE DEGREES OF A. B. AND M. D. RECOMMENDED  
BY THE MEDICAL FACULTY.

	First Semester Hours Credit.	Second Semester Hours Credit
<b>FIRST YEAR.</b>		
English (or German).....	5	0
German (or English) .....	0	5
General Zoology.....	5	0
Theory of Evolution .....	1	0
Chemistry, Inorganic and Qualitative Analysis.....	5	5
General Physics (2b).....	0	6
Physical Training or Military Science.....	0	0
	16	16
<b>Second Year.</b>		
Chemistry Organic .....	3	3
Embryology of Vertebrates.....	0	3
*History (or Ancient Language).....	5	0
*Ancient Language (or History) .....	0	5
*Psychology .....	5	0
Physical Training or Military Science .....	1	1
Elective .....	3	5
	17	17
<b>Third Year.</b>		
Dissection .....	6	6
Normal Histology .....	4	4
Bacteriology .....	3	0
Hygiene .....	0	3
Physical Training or Military Science.....	1	1
Elective.....	3	3
	17	17
<b>Fourth Year.</b>		
Physiology and Physiological Chemistry. ....	10	0
Pharmacology .....	0	4
Pathology, General and Special.. ..	4	8
Neurology .....	3	0
Topographic Anatomy.....	0	3
Principles of Medicine .....	1	1
Elective.....	0	2
	18	18

\*NOTE—When a prescribed minimum amount of High School work in corresponding subjects has been offered for entrance, other subjects may be substituted for those indicated.

## COURSES IN DETAIL.

Courses designated by a number with the letter a attached, thus: 4a, are given the first semester only. Those designated by a number with the letter b attached, thus: 4b, are given the second semester only. Those designated merely by a number are continuous courses and are given both semesters. *The Arabic numerals in parenthesis indicate the number of hours credit a week.*

## ANATOMY AND HISTOLOGY.

Professor JACKSON; Assistant Professor BELL; Dr. MCGILL; Mr. LOWREY.

2. **Dissection.** This course includes the dissection and gross anatomy of the entire body, excepting the central nervous system and the sense organs. For use in the study of osteology, which is correlated with the work in dissection, a complete disarticulated human skeleton is issued to every two students. Fee for use of the skeleton \$2.00 (deposit of \$10.00 required). Laboratory fee in addition, \$7.00 each semester. One quiz or recitation and five laboratory periods a week. *First Year.* (6).

2a. **Advanced Dissection.** Head and Neck. Offered in the session of 1910-11 only. Three laboratory periods a week. Laboratory fee, \$4.50. *Second Year.* (3).

3. **Normal Histology.** A study of the microscopic anatomy of the body. Each student prepares, stains and mounts permanently about 100 specimens for study. Laboratory fee, \$3.50 each semester. One lecture and three laboratory periods a week. *First Year* (4).

4a. **Neurology.** A study of the central nervous system and sense organs. Laboratory, two periods, with one lecture a week. Laboratory fee, \$3.50. *Second Year.* (3).

5b. **Topographic Anatomy.** A study of the topography of the various organs by means of serial sections through the entire body. Laboratory, three periods a week. *Second Year.* (3).

6. **Advanced Anatomy, Histology or Embryology.** The amount and character of the work will be varied to suit individual needs. This course is open only to students who have had the elementary courses in Anatomy, Histology or Embryology. Laboratory. *Elective.*

7. **Research.** Opportunity is afforded to a limited number of properly qualified students for original investigation in Anatomy or Histology. In connection with this course, a seminary is held once a week (which may be taken separately if desired), at which



current literature and results of research work in progress are reported. A reading knowledge of German and French is essential. Hours to be arranged. *Elective*.

### PHYSIOLOGY, PHYSIOLOGICAL CHEMISTRY AND PHARMACOLOGY.

Professor GREENE; Assistant Professor GIBSON; Miss CARR;  
Mr. EWING.

2a. **Experimental Physiology.** The physiology and physiological chemistry of the proteins; of muscle, nerve and connective tissue; of blood, secretions, digestion, absorption, intermediary metabolism and excretions; of nutrition, heat production, and heat regulation. A metabolism experiment with a complete quantitative examination of the urine is required. Laboratory fee \$4.00. Two lectures and two laboratory periods a week. *Second Year*. (4).

3a. **Experimental Physiology.** The physiology of muscle and nerve, circulation, respiration, nervous system, and sense organs. Laboratory fee \$6.00. Three lectures and three laboratory periods a week. *Second year*. (6).

4b. **Physiological Chemistry.** An advanced course supplementing and extending course 2a. The preparation and chemistry of the proteins. A qualitative, and to some extent quantitative study of the tissues and secretions, of enzymes, and of putrefactive products; analysis of foods and food preservatives. The carrying out of a short investigation and formal report on the same is required. Laboratory fee \$5.00. *Elective*. (4).

5b. **Experimental Pharmacology.** This course presents the physiological action of drugs. The laboratory tests are arranged by groups so that students may observe the results of a wide range of experiments, the demonstrations being made on man and the lower animals. Laboratory fee \$5.00. Two lectures and two laboratory periods a week. *Second year*. (4).

6b. **General and Comparative Physiology.** The phenomena of irritability; the effects of chemico-physical forces upon the physiological processes of protoplasm. Introductory courses in Physiology and Zoology are required. Laboratory fee \$2.00 or \$4.00. *Elective*. (2) or (3).

7a or 7b. **Toxicology.** Laboratory fee \$2.00 or \$4.00. *Elective*. (2) or (3).

8. **Journal Club.** *Elective*. (1).

9a. **The Pharmacology of the Circulatory System.** Laboratory fee \$4.00. *Elective*. (3).

10. **Advanced Physiology.** Advanced courses in Physiology,

Pharmacology, and Physiological Chemistry. Individual problems will be assigned to students of sufficient preparation. Laboratory fees and credits to be arranged. *Elective.*

11. **Investigation.** Opportunity is offered for research into questions of current interest. *Elective.*

## **PATHOLOGY, BACTERIOLOGY AND HYGIENE.**

Professor DOLLEY; Dr. MITCHELL; Mr. MARTIN.

1a, 1b. **Pathology, General and Special.** During the first semester, two lectures and two laboratory periods a week will be given, dealing chiefly with the pathogenic bacteria and their relations to Pathology.

During the second semester, the course consists chiefly in laboratory work, with occasional lectures, on General and Special Pathology. This work includes the study of degeneration, regeneration, inflammation, the effects of poisons, the infections, animal parasites, and tumors. When the work of the student is not directed to the post-mortem examination or demonstration of gross material, about five microscopic sections are given daily to the students for staining, mounting, and study. These preparations have a permanent value and become the property of the student. Laboratory fee for first semester, \$5; second semester, \$10. *Second Year.* (4). (8).

2. **Pathology, Research Work.** *Elective.*

4. **Bacteriology, Research Work.** *Elective.*

5b. **Hygiene.** Lectures on the following subjects: History of Hygiene; general hygiene of cities, dwellings, schools, prisons, etc.; commercial hygiene; ways in which important diseases spread, and the means of preventing epidemics; vaccination; disinfection, with special reference to households and schools; quarantines; organization of boards of health in different countries; value of compulsory registration, vital statistics, etc. Lectures. *Second Year.* (3).

7. **Seminary.** Elective for advanced students and graduates.

## **BOTANY.**

Assistant Professor REED; Mr. KUNKEL.

3a. **Morphology and Physiology of the Bacteria.** A general course in the fundamental principles of Bacteriology. Laboratory training in cultural and microscopical technique. *First Year.* (3).

3b. **Morphology and Physiology of the Bacteria.** A repetition of course 3a. (3).

For elective courses in advanced Bacteriology and other courses in Botany, see announcement in general catalogue, under College of Arts and Science.

**CHEMISTRY.**

Professor CALVERT.

11. **Organic Chemistry.** The aim of this course is to give a general survey of the principal classes of organic compounds, such as hydrocarbons, alcohols, phenols, ethers, aldehydes, acids, esters, fats, carbohydrates, etc. In so far as it is possible, the student prepares in the laboratory representatives of the various classes of compounds and studies their reactions. Laboratory fee \$5.00. One lecture and two laboratory periods a week. *First Year.* (3).

For other courses in Chemistry, which may be elected, see courses in Chemistry, College of Arts and Science (General Catalogue).

**ZOOLOGY.**

Professor LEFEVRE; Dr. TANNREUTHER.

5b. **Embryology of Vertebrates.** The course is designed to lay the foundation of vertebrate embryology. In the laboratory the development of the chick and pig is carefully studied from preparations of entire embryos and from sections. These observations are used as a basis of comparison for the study of human embryology. Laboratory fee \$5. Lectures and Laboratory. *First Year.* (3).

For Comparative Anatomy, Cytology, and the courses in Zoology open to medical students as electives, see announcement in general Catalogue, under College of Arts and Science.

**MEDICINE.**

Professor MOSS.

1. **Principles of Medicine.** In this course physical diagnosis is taught, and the principles of medicine and therapeutics illustrated by means of a general out-patient medical clinic held at the Parker Memorial Hospital daily at 4 p. m. Second year medical students are required to attend this clinic three times a week. *Second Year.* (1).

2. **Preventive Medicine.** A course of semi-popular lectures dealing chiefly with the etiology and prevention of the infectious diseases. This course is open to all students of the University. Hours to be arranged. *Elective.*

**ELECTIVES.**

For the pre-medical courses offered in the first two years in the Combined Curriculum, as well as other courses elective to medical students, see announcements in the general University catalogue. With the consent of the Dean, medical students may take any accessory work offered in other departments of the University.

For further information concerning the Medical School, address,

C. M. JACKSON, M. D., Dean,

Columbia, Mo.

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UNIVERSITY OF ILLINOIS

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1911

PRESIDENT'S OFFICE

# THE UNIVERSITY OF MISSOURI BULLETIN

GENERAL SERIES

VOLUME 12 NUMBER 6

ANNOUNCEMENT  
OF THE  
SCHOOL OF MEDICINE  
1911-12



UNIVERSITY OF MISSOURI  
COLUMBIA, MISSOURI  
June, 1911



Published by  
**THE UNIVERSITY OF MISSOURI**  
COLUMBIA, MISSOURI.

Issued Monthly

Entered April 12, 1902, at Columbia, Missouri, as second-class matter,  
under act of Congress of July 16, 1894.



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UNIVERSITY OF MISSOURI  
COLUMBIA, MISSOURI  
June 1911

# UNIVERSITY CALENDAR AT COLUMBIA.

## SUMMER SESSION.

1911—June 9, Friday ..... Registration, Summer Session  
June 10, Saturday ..... Organization of Classes  
August 9, Wednesday ..... Lectures Close  
August 10, Thursday }  
August 11, Friday } ..... Examinations

## First Semester.

September 18, 19, 20. Entrance Examinations and Registration  
September 21, Thursday, at 8 a. m.  
Class Work in all Divisions Begins  
September 21, Thursday, at 10 a. m. .... Opening Convocation  
November 30, Thursday, Thanksgiving Day ..... Holiday  
December 12, Tuesday .... Semi-Annual Meeting of Curators  
December 22, Friday, at 12 m. to ..... }  
1912—January 3, Wednesday, at 9 a. m. } Christmas Holidays  
January 27, Saturday, to  
February 3, Saturday ..... Mid-Year Examinations

## Second Semester.

January 31, February 1, 2, Wednesday,  
Thursday and Friday ..... Entrance Examinations  
February 2, 3, Friday and Saturday  
Registration, Second Semester  
February 5, Monday, at 8 a. m.  
Class Work in All Divisions Begins  
February 8, Thursday, at 10 a. m. .... Opening Convocation  
February 22, Thursday, Washington's Birthday ..... Holiday  
April 4, Thursday ..... Quarterly Meeting of Curators  
April 4, Thursday at 4 p. m. to April 9,  
Tuesday at 9 a. m. .... Easter Holidays  
June 1, Saturday, to June 8, Saturday.. Final Examinations  
June 8, Saturday ..... Stephens Medal Contest  
June 9, Sunday ..... Baccalaureate Serman  
June 10, Monday ..... Class Day  
June 10, 11, 12, Monday, Tuesday and Wednesday  
Entrance Examinations  
June 11, Tuesday ..... Class Re-union Day  
June 12, Wednesday ..... Alumni Day  
June 13, Thursday ..... Annual Meeting of Curators  
June 13, Thursday ..... Commencement Day

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## THE UNIVERSITY OF MISSOURI.

The University of Missouri was located at Columbia, Missouri, in 1839, and instruction in Academic work was begun in 1841. In the course of its development the institution has found itself called upon to organize several departments of instruction and administration in response to the needs of the several vocations followed by the citizens of the State.

The present organization, with two colleges (Arts and Science, and Agriculture) and schools for professional and graduate work, was adopted May 31, 1909. The separate divisions, each of which was in some form differentiated from the rest of the institution in the year indicated, are as follows:

- I. College of Arts and Science (1839).
- II. School of Education (1867).
- III. College of Agriculture (1870).
- IV. School of Mines and Metallurgy at Rolla (1870).
- V. School of Law (1872).
- VI. School of Medicine (1873).
- VII. School of Engineering (1877).
- VIII. Graduate School (1896).
- IX. School of Journalism (1906).

In addition, special emphasis is given particular lines of work by the establishment and operation of special minor divisions, the chief of which are the Extension Division, the Agricultural Experiment Station, the Engineering Experiment Station, and the Military Department. All of these divisions are located at Columbia with the exception of the School of Mines and Metallurgy, which is situated at Rolla.

Columbia, a town of about 10,000 inhabitants, is situated near the center of the State, half way between St. Louis and Kansas City. It is reached from the east, north, and west by the Wabash Railroad, and connecting lines. The Missouri, Kansas and Texas Railroad affords a direct route to Columbia to persons living on that line, and to those living on the Missouri Pacific, St. Louis and San Francisco, and other southern railroads.

The surrounding region is elevated, well drained and diversified. The University grounds comprise over seven hundred acres of undulating land in the southern part of the town and its outskirts. The main divisions of the grounds are the Quadrangle of



thirty-two acres, the Horticultural grounds of thirty acres, the Physical Education grounds, and the Experiment Farm of 648 acres.

The University has the following buildings at Columbia: Academic Hall, Laws Observatory, separate buildings for Chemistry, Zoology and Geology; Engineering, and Mechanic Arts; three power-houses; Medical Laboratory Building, Parker Memorial Hospital, including the Busch Clinic, and an Animal Building; Agricultural Building, Horticultural Building and Green Houses, Live-Stock Judging, Dairy, Farm Machinery, and Veterinary Buildings, and the Agricultural Farm Barns and Buildings; Switzler Hall (Journalism); the President's House, and the dwelling of the Dean of the College of Agriculture; Benton and Lathrop Halls (dormitories for men), Read Hall (dormitory for women), and the Gymnasium (for men). The women's Gymnasium is housed in Academic Hall, and the practice schools of the School of Education in an old dwelling belonging to the University and in a good building, originally erected for an academy.

## THE PROFESSION OF MEDICINE.

The following pages will be devoted to a brief consideration of certain questions of interest to all who expect to follow the profession of medicine. It is important that all prospective medical students should know the present status of medicine, its advantages and disadvantages as a profession, the opportunities which it offers and the qualifications necessary for success. It is especially important that the general principles underlying sound medical education be clearly understood and that data be made available which will enable those interested to judge of the relative merits of the numerous medical schools in this country.

### Advantages and Disadvantages of Medicine as a Profession.

Some of the more obvious disadvantages of medicine as a profession may first be mentioned. Among these are the irregularity of the work, the exposure and danger, the severity of physical and mental strain, and the relatively poor remuneration in comparison with the skill and education necessary. It should be clearly understood that competition is severe, for the medical profession (like most others) is overcrowded. There are to-day in the United States more than 125,000 licensed practitioners (not counting irregulars of various kinds), or an average of about one to every seven hundred people. In proportion to the population, this is twice as many as are licensed in Great Britain, and over three times as many as in France and Germany. Moreover, with the increase of popular knowledge regarding hygiene and preventive medicine, the need for medical service is in some respects diminishing.

As an offset to the foregoing, however, the medical profession has numerous advantages to offer to those properly qualified. In the first place, for those who achieve eminence by reason of unusual ability and thorough training, the financial rewards are great. This is especially true in surgery and certain other special lines. Even aside from these exceptional cases, every really well-qualified practitioner is reasonably sure of a good income.

Money, however, is by no means the chief attraction which the profession of medicine has to offer. There is a fascination about the work which is difficult to explain, but which is nevertheless characteristic. Successful practitioners enjoy their work, in spite of hardships and difficulties. Moreover, even in this materialistic

age, the philanthropic aspect of the practice of medicine appeals strongly to many. From this point of view, no profession offers greater opportunities for public and private service.

Another phase of medical work, which to many is more attractive than the ordinary practice, is that of teaching and investigation in the various medical sciences. There is at present a strong demand, which is likely to continue, for well-trained men who will devote themselves to Anatomy, Physiology, Pathology, etc. While not so remunerative as the practice of medicine, positions in these and similar branches offer good salaries and an attractive career to those whose tastes and talents incline toward teaching and research.

Finally, so far as competition is concerned, there is no question that the medical profession is overcrowded, but it is *overcrowded with incompetents*. It is true that our leading surgeons rank among the best in the world. But on the other hand, owing to the low standards of medical education which have prevailed during the past, it must be confessed that the rank and file of medical practitioners average very low in efficiency. Nowhere is it more emphatically true that "there's plenty of room at the top." No man of reasonable ability with thorough collegiate and professional training need fear the competition. And as the general public is learning to discriminate more carefully, the demand for well-qualified physicians grows stronger. It is therefore exceedingly important for the prospective medical student to consider carefully the qualifications necessary for success in this profession, in order that he may prepare himself accordingly.

#### Requirements for Success in Medicine.

The qualifications necessary for success in medicine include certain personal characteristics plus an adequate training through premedical and medical education. Among the personal qualifications, both physical and mental vigor are of primary importance. Weaklings and dullards have no chance for success in the field of medicine. Integrity is also necessary, for only those of the highest character are fit to uphold the ideals of the medical profession. Finally, natural fitness and inclination for medical work should be considered. Few can hope to maintain the prolonged effort necessary to win success in this great field, unless the work is in accordance with their natural tastes and talents.

## Premedical Education.

Assuming that one has the requisite personal qualifications, the next question which arises concerns the education, both pre-medical and medical, which is necessary for success. In considering this matter, it must be remembered that medicine is an applied science. For success in any applied science, two things are necessary: first, to master your science; and, second, to learn how to apply it. To master the difficult science of modern medicine, it is absolutely necessary to have a thorough preliminary scientific training.

The amount and character of the necessary preliminary training for medicine is a theme which has been much discussed in recent years. While there are still different views concerning details, there is with reference to the essential points a general consensus of opinion among those entitled to speak with authority in this matter. The first point which should be emphasized is that *a high-school education alone is insufficient*, especially in science, to prepare a student for the difficult medical curriculum of to-day. The necessity for collegiate work preliminary to medicine is so important and so clearly recognized that it is now required by law in eight States, including Minnesota, Iowa, North and South Dakota, Kansas, Indiana, Connecticut and Colorado.

In these States, in order to be admitted to examination for license to practice, one must show that he took at least one or two years of collegiate work, in addition to the equivalent of a four years' high school course, before entering a medical school. Before the time when those now entering medicine will be graduated, this legal requirement will doubtless be established in many other States. *Students should therefore beware of entering medicine without preliminary collegiate work.*

While it is generally recognized that at least one or two years of preliminary collegiate work are necessary, few will urge, as a general requirement, the completion of four years of college work before entering medicine. Indeed it is probable that as a general rule this is an unnecessary expense of time and money, and postpones unduly the age at which practice begins. As a matter of fact, no medical school in this country has an absolute minimum requirement of more than three years of college work for entrance, and the majority of the first-class schools have only a two years' requirement.

Taking all things into consideration, it is the consensus of opinion that the requirement of two years of collegiate work for entrance best meets present conditions. This, it may be noted,

is approximately equivalent to the entrance requirement for medicine in the leading European nations. An admirable solution of the problem of preliminary medical education is found in the "combined course" in Arts and Medicine, whereby it is possible to secure the A. B. degree and also the M. D. within six (or seven) years.

As to the *character* of the collegiate work preparatory to medicine, there is now a general agreement of opinion. The old idea that there exists an ideal college course, classical or otherwise, which prepares for *any* vocation is now abandoned. The present elective system makes it desirable for one to decide upon his future career as early as possible, and to plan his college course so as to prepare himself for the greatest possible efficiency in his life work. This doctrine is frankly utilitarian, but "useful" should here be interpreted in the wider, and not in the narrow "bread-and-butter" sense of the term. "Students of medicine, perhaps more than any other class of men, and certainly more now than ever before, must be broadly liberal in order to be minutely special."

What subjects, then, should the premedical college course include? First and foremost, it should be so planned as to give a thorough training in biology, especially zoology. Most of the accurate and useful knowledge we have concerning the laws of life and death is derived from careful study and experimentation upon lower forms of life. All living things are built up of similar units called cells. Each cell is composed of the living substance, protoplasm, and upon the physical and chemical changes therein depend the phenomena of life.

In order to understand the nature and conditions of life, it is therefore further evident that one must have a thorough knowledge of physics and chemistry. As time goes on, biology in general and medicine in particular are based more and more upon the fundamental laws of physics and chemistry. Having laid a good foundation in physics, chemistry and zoology, the student is prepared for the more specialized biological sciences, anatomy, physiology and pathology; and these in turn lead up to the technical courses in clinical medicine.

Other sciences valuable for the medical student are botany and experimental psychology. Of mathematics, enough should be taken to facilitate the work in physics and chemistry. In languages, excepting an elementary knowledge of Latin (usually taken in the high school), French and German are most valuable. This is especially true of German, since a large proportion of the most important biological and medical work is published in that language.



English, too, should not be neglected, for every physician should certainly understand the use of his mother tongue. Finally, a course in free-hand drawing is exceedingly useful in many ways.

The advantages of a premedical scientific college course as outlined above are well summarized by the following quotation (from the Journal of the American Medical Association, May 27, 1911): "As a part of the education which should be preliminary to the study of medicine, courses in physics, chemistry, biology and modern languages have been especially urged during the last several years by the Council on Medical Education. The importance of the sciences named does not depend so much on the bare knowledge obtained from them as on training the student receives. In the work in these sciences, and particularly in the laboratory work, the student, under able instructors, acquires the ability to think for himself; he develops the scientific spirit; he learns the use of the microscope and becomes acquainted with the methods and value of experimentation. A reading knowledge of French and German is an invaluable aid to the medical student since it furnishes access to all the world's recent medical knowledge, a large portion of which appears in the languages named. That is the minimum preliminary education which should be insisted upon in this country, not because it is the minimum requirement in every other civilized nation, which is a fact, but because the student really needs that training in order to master the complex courses in the modern medical curriculum and to do his part in solving the intricate problems which now confront the medical world. In the medical course of to-day the ability of the student to think, to observe and to do research work is very essential. This was not so necessary twenty-five or thirty years ago. Experience has shown that the needed qualifications are best developed by thorough courses, under expert teachers, in physics, chemistry, biology and modern languages. These are the reasons for urging those courses as a part of the minimum requirement for admission to the medical schools in this country."

#### Medical Education.

Presupposing the preliminary college training as above outlined, the medical education proper may next be considered. What are the subjects included in the medical curriculum, and what facilities are necessary in order that they may be successfully taught? As previously stated, medicine is an applied science. Broadly speaking, therefore, it is necessary first to master the subject matter, the fundamental medical sciences, and then to learn how to apply these

in clinical medicine, in the prevention and cure of disease. Medical education therefore falls naturally into two subdivisions, the fundamental work occupying the first two years, and the clinical work the last two (or three, if a hospital year be added). Each of these periods will be considered briefly, following which some data will be cited whereby the relative merits of the various medical schools may be judged.

### Fundamental Medical Education.

The fundamental sciences upon which medicine is directly based may be grouped under three headings. The first of these, the anatomical group, includes those which concern primarily the *normal form and structure* of the human body. These include gross anatomy (dissection, osteology, neurology, topographic anatomy, etc.), microscopic anatomy (histology) and embryology. The second, or physiological group, includes those studies which concern primarily the *normal functions* of the living organism. In this group, in addition to physiology in the narrower sense, we may place organic and physiological chemistry, and also pharmacology, which deals with the effects of drugs upon the normal organism. The third group, known as pathology (including bacteriology) deals with the *abnormal conditions* of structure and function which are associated with disease. Finally, there is the subject of hygiene and preventive medicine, which lies in the borderland between the fundamental sciences previously mentioned, and the succeeding subjects in clinical medicine.

It is impossible within the limits of this bulletin to discuss in detail the requisites necessary for thorough instruction in the fundamental sciences. Those desiring to look into this matter more fully are referred to a work entitled "A Model Medical Curriculum," a report of a committee of one hundred leading educators, issued by the Council on Medical Education of the American Medical Association, 535 Dearborn Ave., Chicago, Ill.

It may be noted briefly that the old-fashioned didactic method of teaching by lectures and recitations from books has been completely revolutionized and replaced by the laboratory method, whereby the student directly observes and studies the phenomena for himself. The laboratory method of instruction requires for success two essential factors. First and most important, the teachers in the various laboratory subjects must be thoroughly trained specialists, who are paid salaries to devote their entire time to this work, and are not allowed to practice medicine. They should moreover be active

investigators whose enthusiasm will be an inspiration to their students. Too much emphasis cannot be laid upon "the man behind the gun." The second factor includes the facilities, buildings, equipment and materials for thorough work in each of the laboratories for the various fundamental medical sciences. These two factors, the full-time, thoroughly trained teachers and the numerous well-equipped laboratories are so costly as to be out of the reach of most medical schools, but they are necessary in order to obtain the thorough laboratory instruction which is essential in modern medical education.

Another necessity, the importance of which is becoming more clearly recognized, is a good medical library. This should include several thousand well chosen volumes for reference, including files of one hundred or more of the leading medical periodicals of the world. A good medical library is also very expensive, but is necessary for the best work in instruction, and absolutely essential for research.

### Clinical Medical Education.

When the student has completed the first two years of the curriculum and has mastered the fundamental medical sciences, he is familiar with the structure and functions of the human body, both normal and abnormal, and is ready to learn how to apply these principles at the bedside for the alleviation and cure of disease. This final period of medical education is designated clinical medicine. It includes two broad groups, internal medicine and surgery, each with numerous subdivisions. Here also lack of space prevents a discussion of each of the numerous special branches, for a full consideration of which the reader may consult the work "A Model Medical Curriculum" previously referred to. In passing, however, it may be remarked that for successful clinical teaching the essentials are very similar to those already stated for the laboratory sciences. The teachers should be skilled and experienced, each a recognized authority in his particular line. Here also it is highly desirable that salaries should be paid so that the teacher's whole time may be devoted to instruction and investigation, though very few schools are financially able to carry out this policy. The laboratory of the clinical work is the hospital, and it is essential for successful clinical work that each school should own or absolutely control the clinical facilities in a large hospital with a sufficient number of beds in each of the various clinical branches. Certain clinical laboratories must also be provided.

On account of the heavy expenses involved in providing salaried teachers, laboratory and hospital facilities, it is axiomatic that no school can depend solely upon students' fees for support. Private endowment or state support on a generous scale is essential to provide medical education fully up to modern standards.

### Criteria for Judging Schools.

Having in mind the essential elements involved in a thorough premedical and medical education, it devolves upon the prospective student to select the school which he will attend. This is a critical problem, and grave mistakes are often made through lack of knowledge regarding the various schools. With regard to the premedical college work, the problem is less difficult, but it is essential to choose a college well equipped for teaching the fundamental sciences of biology, physics and chemistry. In general, these are best taught in the stronger universities, such as those in the Association of American Universities.\*

In choosing a school for the medical curriculum proper, the problem is much more complicated. There are in the United States about 130 medical colleges, good, bad and indifferent, whose relative merits it is difficult for the student to judge. Bearing in mind the essential principles previously outlined, the most important information desirable is indicated in the following questions:

1. As to organization, is it an independent medical school, or an integral (not merely nominal) department of a strong university?
2. What is the amount of the income and expenditure? Is the income dependent solely upon students' fees, or is it supported liberally by endowment or state appropriations?
3. What is the extent and character of the laboratory and clinical facilities, its buildings, equipment, library, etc.
4. What is the character of the faculty? Are the teachers full-time salaried experts, or are they allowed to engage in the private practice of medicine?

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\* This Association includes the following universities: California, Catholic University, Chicago, Clark, Columbia, Cornell, Harvard, Illinois, Indiana, Iowa, Johns Hopkins, Kansas, Michigan, Minnesota, Missouri, Nebraska, Stanford, Pennsylvania, Princeton, Virginia, Wisconsin and Yale.



5. Do the entrance requirements include a minimum of two years of college work, and are they strictly enforced?

6. What is the character of the curriculum, stress laid upon practical work in laboratory and clinics, opportunity for research, etc. ?

7. Are the classes large or small, allowing individual attention to each student?

8. What are the tuition fees and expenses?

9. What is the general standing of the school, its rating by competent and disinterested organizations, and its efficiency as measured by the results of the examination of its graduates before the various State licensing boards?

#### Where to Find Information.

Where can the prospective student find reliable data in answer to the preceding questions? Much can of course be learned from the catalogues of the various schools, but in many cases it must be confessed that the information contained therein is incomplete, and even misleading. It may therefore be of service to those interested in this matter to know where to find reliable data from disinterested sources.

In the first place, a list of the medical schools of the United States together with brief information (furnished, however, by the schools themselves) is published in the chapter on "Professional Schools" in the annual report of the Commissioner of Education, U. S. Bureau of Education, Dep't. of the Interior, Washington, D. C. A reprint of this chapter is obtainable and is useful for reference.

Similar information, which is more complete in some respects, is published each year during August in the "Educational Number" of the Journal of the American Medical Association (Chicago).

The Council on Medical Education of the A. M. A. has made a thorough personal inspection and investigation of the various medical schools of the country, and has rated them in three classes:

Class A, acceptable medical colleges, including about 70 schools; Class B, medical colleges needing certain improvements to make them acceptable (about 30 schools); and Class C, medical colleges which would require a complete reorganization to make them acceptable (about 30 schools). A copy of the rating, naming the schools in each class can be obtained from the Secretary of the Council, 535 Dearborn Ave., Chicago. In this rating, the various schools are judged with considerable leniency.



Another basis for judgment is to be found in the membership of the Association of American Medical Colleges, with about 50 schools, including nearly all of the better class. A list of the members is published annually in the Educational Number of the Journal A. M. A. above referred to, or may be obtained from the Secretary, Dr. F. C. Zapffe, 3431 Lexington St., Chicago, Ill.

Information showing the percentage of failures of graduates of the various schools in examinations before the different state licensing boards is published annually in the "State Board Number" of the Journal A. M. A. (Chicago). The most recent issue of this number is dated May 27, 1911. Those interested especially in Missouri schools will find considerable information in the report of the State Council on Medical Education, published in the July, 1911, number of the Journal of the Missouri State Medical Association (St. Louis).

By far the most full, frank and instructive account of the medical situation is to be found in the bulletin entitled "Medical Education in the United States and Canada; a Report to the Carnegie Foundation for the Advancement of Teaching by Abraham Flexner." This is a large volume (346 pages) published in 1910, and may be obtained by sending 17 cents for postage (address: 576 Fifth Ave., New York City). This report is divided into two parts. The first part deals with the general principles of medical education, ideals versus present conditions, organization and equipment of medical schools, course of study, medical sects, etc. The second part gives a detailed and critical account of the various schools, including the defects as well as the good points of each. This report, which is based upon an actual inspection of each school, will be found exceedingly instructive and useful to all interested in medical education.

#### School of Medicine of the University of Missouri.

In conclusion, attention is invited to a brief statement concerning the School of Medicine of the University of Missouri, and the advantages which it offers in the way of facilities for obtaining at low cost premedical and medical education measuring up to the high standards previously outlined. A statement briefly indicating the general scope of the University of Missouri is given at the beginning of this bulletin. For general college work unsurpassed facilities are offered in the College of Arts and Science. Here the student who has completed only the high school course (15 units, or equivalent) has an excellent opportunity to secure the two years (60 hours credit) of college work required to enter the Medical School

proper. The 60 hours must include a minimum of 5 hours each in Zoology, Chemistry, Physics, German and English, the remaining 35 hours being elective.

#### **Combined Work in Arts and Medicine.**

If the student will select his electives according to the following curriculum, outlined and recommended by the medical faculty, he will at the end of the four years have completed the requirements for the A. B. degree, and also have finished the first two years' work in Medicine. The first two years in this outline include all the college work required for admission to the Medical School, and the last two years include the two years' curriculum in Medicine proper.

CURRICULUM LEADING TO THE DEGREE OF A. B. AND MEDICAL CERTIFICATE RECOMMENDED BY THE MEDICAL FACULTY.

	First Semester Hours Credit	Second Semester Hours Credit
FIRST YEAR.		
English (or German).....	5	0
German (or English).....	0	5
General Zoology (1a).....	5	0
Zoology (3a) Mammalian Osteology.....	1	0
Chemistry, Inorganic and Analytical.....	5	5
General Physics (2b).....	0	6
Physical Training or Military Science.....	0	0
	16	16
SECOND YEAR.		
Chemistry Organic.....	3	3
Embryology of Vertebrates.....	0	3
*History (or Ancient Language).....	5	0
*Ancient Language (or History).....	0	5
*Psychology.....	5	0
Physical Training or Military Science.....	1	1
Elective.....	3	5
	17	17
THIRD YEAR		
Dissection.....	6	6
Normal Histology.....	4	4
Bacteriology.....	3	0
Physical Training or Military Science.....	1	1
Elective.....	3	6
	17	17
FOURTH YEAR		
Physiology and Physiological Chemistry.....	10	0
Pharmacology.....	0	4
Pathology, General and Special.....	4	8
Neurology.....	3	0
Topographic Anatomy.....	0	3
Principles of Medicine.....	1	1
Hygiene.....	0	3
	18	19

\*NOTE—When a prescribed minimum amount of High School work in corresponding subjects has been offered for entrance, other subjects may be substituted for those indicated.

### Medical Facilities.

The School of Medicine, in which the medical work proper (last two years of the combined curriculum) is given, is located on the same campus as the other divisions of the University. Of the various buildings (over twenty) on the campus, a group of three (the Medical Laboratory Building, the Animal House, and the Parker Memorial Hospital) are devoted to the School of Medicine. Several others (for Chemistry, Zoology, etc.) are also utilized in part for medical instruction. The Medical Library is located in the Medical Laboratory Building. A complete description of the various buildings and their equipment is given in the general University catalogue.

The Medical School is an integral part of the University, whose total income from all sources is about \$850,000 a year. The Medical School is supported from this income, about \$30,000 being expended annually for this purpose (including Hospital), while less than \$3,000 is collected in fees from the medical students.

As a result of this liberal support, it has been possible for many years to organize and maintain the medical work on a proper University basis. The faculty is composed of eminent specialists, who are not allowed to engage in the practice of medicine, but devote their entire time to teaching and investigation. The course of study is carefully planned, modern laboratory methods being used throughout. The high standards of admission result in small classes (not over twenty-five in each) prepared for the highest type of work. Women are admitted on equal terms with men. Details concerning the various courses, as well as a list of the faculty and students, will be found in the general catalogue.

### Aim of the School of Medicine.

The aim of the School of Medicine is threefold:

(1) To give a thorough laboratory training in those scientific subjects which are fundamental to medicine and form an indispensable preparation for the clinical work.

(2) To contribute to the advancement of medicine by original investigation in the various sciences upon which modern medicine is based.

(3) To promote the diffusion of medical knowledge among the citizens of the State, especially through the medical profession.

### Medical Certificate.

On account of the lack of adequate clinical facilities, the School of Medicine does not at present offer the last two (or clinical) years of Medicine. At the end of two years' medical curriculum (last two years of combined course), however, a Medical Certificate is conferred, which will admit the student, with full credit, to the leading medical schools where facilities are available for the last two years' work.

There is no disadvantage in thus changing to a new place for the clinical work, for there is a natural break in the medical curriculum at this time. Reason and experience agree that the first two years should be devoted exclusively to the fundamental medical sciences. For this work, thoroughly equipped laboratories are necessary. The student is unprepared for clinics, which at this time are apt even to constitute a harmful distraction. At the beginning of the third year, however, the medical student enters upon his clinical work, a new phase of the subject with different teachers, whether in the same or a different school. Several of the leading universities thus find it best to separate the medical curriculum into two parts, giving the first two years laboratory work at the seat of the University and the last two years of clinical work in a larger city.

### Graduate Work in Medical Sciences.

Special opportunity is given, and every encouragement is offered, to students who desire to do advanced work in any of the fundamental medical sciences. By a year of graduate work, the Master's Degree (A. M.) may be secured, and in three years the degree of Ph. D. Advanced work of the research type in the fundamental medical sciences is highly desirable as a basis for the most thorough work in clinical medicine. It is especially advantageous, however, for those students who desire to specialize with a view to becoming teachers in any of these branches. As previously mentioned, the demand for such teachers far exceeds the supply, and offers an attractive career which many graduates of this school have followed with success.

Fellowships and scholarships are available to those who are qualified for graduate work.



**Low Cost of Medical Education.**

Another advantage is the unusually low cost at which premedical and medical education of the highest type may here be obtained. In order to show what it actually costs, statistics have been collected from both premedical and medical students of the University, showing the total expenses for the past school year (1910-11). The average cost per student, also the maximum and minimum, is indicated for each item.

Average cost for	Premedical (1st and 2d yrs. of combined course)	Medical (3d and 4th yrs. of combined course)
Board	\$106 (\$ 80 to \$148)	\$111 (\$ 78 to \$160)
Room	\$ 47 (\$ 30 to \$ 80)	\$ 45 (\$ 32 to \$ 80)
Tuition and Laboratory Fees	\$ 33 (\$ 20 to \$ 48)	\$ 71 (\$ 60 to \$ 83)
Books and Stationery	\$ 16 (\$ 6 to \$ 30)	\$ 32 (\$ 15 to \$ 50)
Clothing	\$ 48 (\$ 10 to \$150)	\$ 54 (\$ 7 to \$180)
Incidentals	\$ 65 (\$ 12 to \$150)	\$ 69 (\$ 12 to \$153)
Average total	\$315 (\$190 to \$541)	\$382 (\$258 to \$624)

From this table it is evident that the average total cost for the school year (nine months) is about \$315 in the premedical, and \$385 in the medical years. The average is of course higher than necessary, due to those who are able to afford many luxuries. The minimum figures, however, show that by economy, the cost is reduced to about \$200 and \$250 respectively. Thus the total cost for the four years is less than that for two years of medicine alone in many of the prominent schools.

**Opportunity for Self-Support.**

In the case of students working their way through (about half of the class) the net cost is even reduced considerably lower. The average amount earned by self-supporting students during the school year in the premedical classes was \$132 (\$25 to \$204) and in the

medical classes was \$154 (\$11 to \$337). It is therefore evident that by earning at least \$100 more during the summer vacation it is possible for the average student to *pay his entire way* through the premedical and medical years. This is actually accomplished by a considerable number of students. Students who desire work should apply to the Employment Bureau of the Y. M. C. A., University of Missouri. As a rule, every student should have at least \$100 ahead at the start, and those who come before school opens have the best chance for employment. Board and room may be obtained in the University dormitories and dining club for about \$3 a week, but applications must be filed early, as the space is limited.

### High Standing of the School of Medicine.

The School of Medicine of the University is rated in class A by the Council on Medical Education of the American Medical Association. It is also a member of the Association of American Medical Colleges. In the report of the Carnegie Foundation above referred to, the facilities of the Medical School of the University of Missouri are summarized (p. 251) as follows: "*The medical department occupies a new and well equipped building, excellently adapted to its purposes. The teaching is in charge of full-time instructors of modern training and ideals. A university hospital of 45 beds gives the department the advantage of clinical material and connection, even though the actual instruction is limited to the work of the first two years, a feature of great importance. There is a library supplied with important current periodicals, domestic and foreign.*"

For further information in regard to the School of Medicine, address

C. M. JACKSON,  
Dean of School of Medicine,  
University of Missouri,  
Columbia, Missouri.

For catalogue of the University and for special circulars of the Graduate School, College of Arts and Science, College of Agriculture, School of Education, School of Law, School of Medicine, School of Engineering, and School of Journalism, address

MAILING CLERK,  
University of Missouri,  
Columbia, Missouri.





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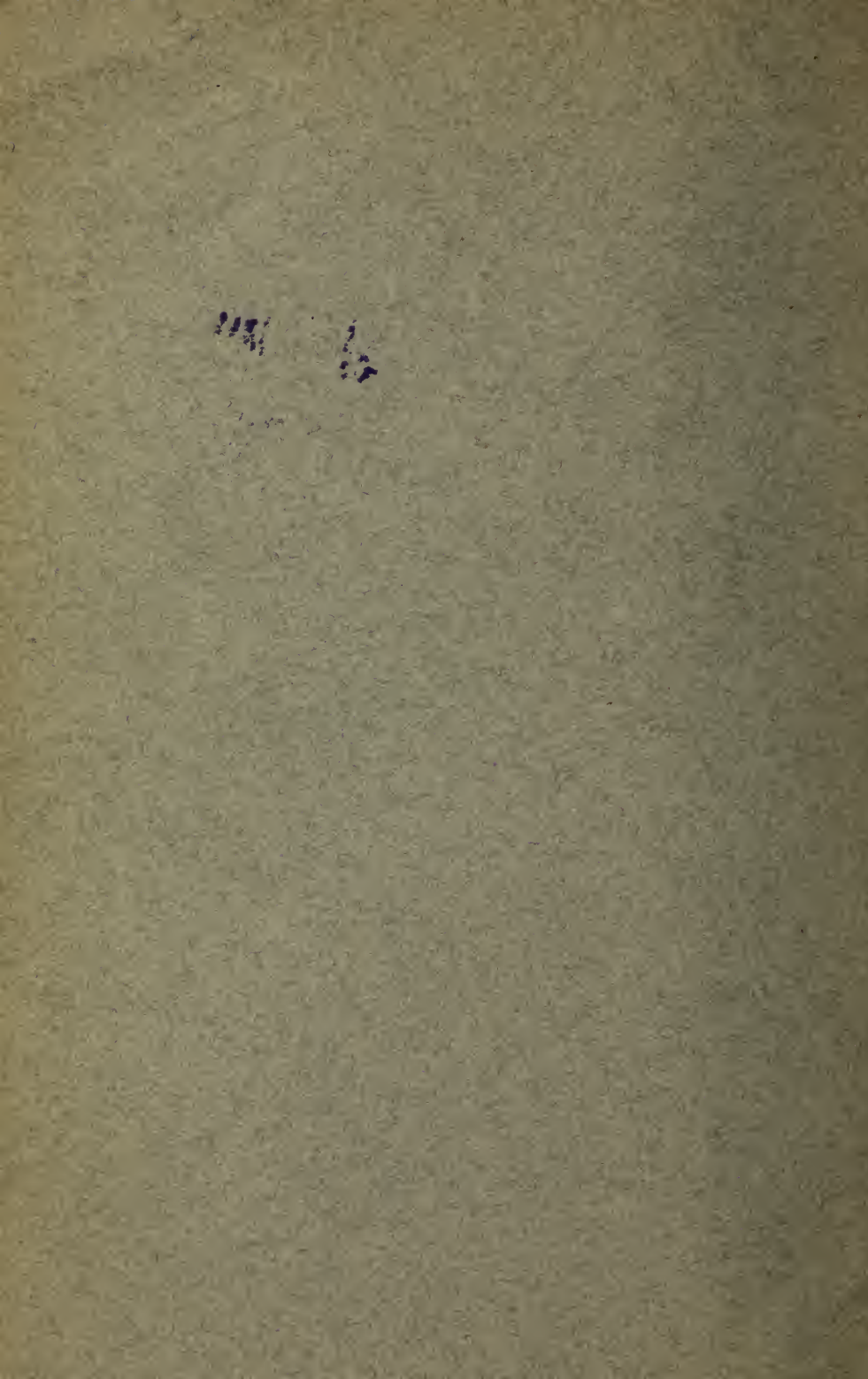
PRESIDENT'S OFFICE

THE  
UNIVERSITY OF MISSOURI  
BULLETIN.

Volume 12, General Series 1911.

Number 1, January .....	Summer Session
Number 2, February .....	Graduate School
Number 3, March .....	School of Education
Number 4, April .....	School of Law
Number 5, May .....	Catalogue
Number 6, June .....	School of Medicine
Number 7, July .....	College of Arts and Science
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Number 9, September .....	School of Agriculture
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Number 12, December .....	Second Semester Courses





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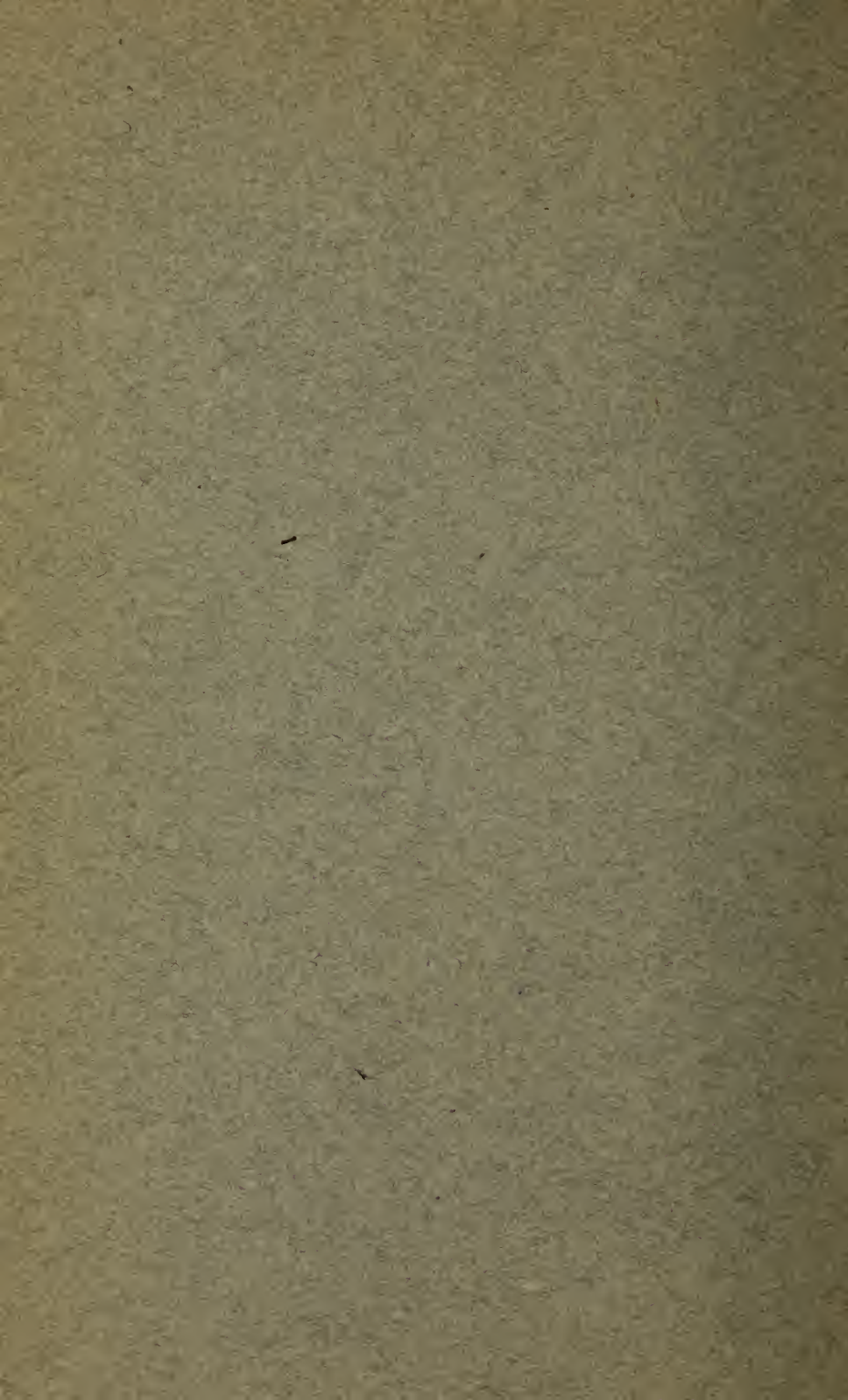
VOLUME 13      NUMBER 6

ANNOUNCEMENT  
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UNIVERSITY OF MISSOURI  
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## **THE PROFESSION OF MEDICINE.**

The following pages will be devoted to a brief consideration of certain questions of interest to all who expect to follow the profession of medicine. It is important that all prospective medical students should know the present status of medicine, its advantages and disadvantages as a profession, the opportunities which it offers and the qualifications necessary for success. It is especially important that the general principles underlying sound medical education be clearly understood and that data be made available which will enable those interested to judge of the relative merits of the numerous medical schools in this country.

### **Advantages and Disadvantages of Medicine as Profession.**

Some of the more obvious disadvantages of medicine as a profession may first be mentioned. Among these are the irregularity of the work, the exposure and danger, the severity of physical and mental strain, and the relatively poor remuneration in comparison with the skill and education necessary. It should be clearly understood that competition is severe, for the medical profession (like most others) is overcrowded. There are today in the United States nearly 140,000 licensed practitioners (not counting irregulars of various kinds), or an average of about one to every seven hundred people. In proportion to the population, this is twice as many as are licensed in Great Britain, and over three times as many as in France and Germany. Moreover, with the increase of popular knowledge regarding hygiene and preventive medicine, the need for medical service is in some respects diminishing.

As an offset to the foregoing, however, the medical profession has numerous advantages to offer to those properly qualified. In the first place, for those who achieve eminence by reason of unusual ability and thorough training, the financial rewards are great. This is especially true in surgery and certain other special lines. Even aside from these exceptional cases, every really well-qualified practitioner is reasonably sure of a good income.

Money, however, is by no means the chief attraction which the profession of medicine has to offer. There is a fascination about the work which is difficult to explain, but which is nevertheless characteristic. Successful practitioners enjoy their work, in

spite of hardships and difficulties. Moreover, even in this materialistic age, the philanthropic aspect of the practice of medicine appeals strongly to many. From this point of view, no profession offers greater opportunities for public and private service.

Another phase of medical work, which to many is more attractive than the ordinary practice, is that of teaching and investigation in the various medical sciences. There is at present a strong demand, which is likely to continue, for well-trained men who will devote themselves to Anatomy, Physiology, Pathology, etc. While not so remunerative as the practice of medicine, positions in these and similar branches offer good salaries and an attractive career to those whose tastes and talents incline toward teaching and research.

Finally, so far as competition is concerned, there is no question that the medical profession **is** overcrowded, but it is **overcrowded with incompetents**. It is true that our leading surgeons rank among the best in the world. But on the other hand, owing to the low standards of medical education which have prevailed during the past, it must be confessed that the rank and file of medical practitioners average very low in efficiency. Nowhere is it more emphatically true that "there's plenty of room at the top." No man of reasonable ability with thorough collegiate and professional training need fear the competition. And as the general public is learning to discriminate more carefully, the demand for well-qualified physicians grows stronger. It is therefore exceedingly important for the prospective medical student to consider carefully the qualifications necessary for success in this profession, in order that he may prepare himself accordingly.

### Requirements for Success in Medicine.

The qualifications necessary for success in medicine include certain personal characteristics plus an adequate training through premedical and medical education. Among the personal qualifications, both physical and mental vigor are of primary importance. Weaklings and dullards have no chance for success in the field of medicine. Integrity is also necessary, for only those of the highest character are fit to uphold the ideals of the medical profession. Finally, natural fitness and inclination for medical work should be considered. Few can hope to maintain the prolonged effort necessary to win success in this great field, unless the work is in accordance with their natural tastes and talents.

### Premedical Education.

Assuming that one has the requisite personal qualifications, the next question which arises concerns the education, both pre-medical and medical, which is necessary for success. In considering this matter, it must be remembered that medicine is an applied science. For success in any applied science, two things are necessary: first to master your science; and, second, to learn how to apply it. To master the difficult science of modern medicine, it is absolutely necessary to have a thorough preliminary scientific training.

The amount and character of the necessary preliminary training for medicine is a theme which has been much discussed in recent years. While there are still different views concerning details, there is with reference to the essential points a general consensus of opinion among those entitled to speak with authority in this matter. The first point which should be emphasized is that a **high-school education alone is insufficient**, especially in science, to prepare a student for the difficult medical curriculum of today. The necessity for collegiate work preliminary to medicine is so important and so clearly recognized that it is now required by law in nine States, including Minnesota, Iowa, North and South Dakota, Kansas, Indiana, Connecticut, Colorado and Utah.

In these States, in order to be admitted to examination for license to practice, one must show that he took at least one or two years of collegiate work, in addition to the equivalent of a four years' high school course, before entering a medical school. Before the time when those now entering medicine will be graduated, this legal requirement will doubtless be established in many other States. Students should therefore beware of entering medicine without preliminary collegiate work.

While it is generally recognized that at least one or two years of preliminary collegiate work are necessary, few will urge, as a general requirement, the completion of four years of college work before entering medicine. Indeed it is probable that as a general rule this is an unnecessary expense of time and money, and postpones unduly the age at which practice begins. As a matter of fact, no medical school in this country has an absolute minimum requirement of more than three years of college work for entrance, and the majority of the first-class schools have only a two years' requirement.

Taking all things into consideration, it is the consensus of opinion that the requirement of two years of collegiate work for entrance best meets present conditions. This, it may be noted, is approximately equivalent to the entrance requirement for medi-

cine in the leading European nations. An admirable solution of the problem of preliminary medical education is found in the "combined course" in Arts and Medicine, whereby it is possible to secure the A. B. degree and also the M. D. within six (or seven) years.

As to the character of the collegiate work preparatory to medicine, there is now a general agreement of opinion. The old idea that there exists an ideal college course, classical or otherwise, which prepares for any vocation is now abandoned. The present elective system makes it desirable for one to decide upon his future career as early as possible, and to plan his college course so as to prepare himself for the greatest possible efficiency in his life work. This doctrine is frankly utilitarian, but "useful" should here be interpreted in the wider, and not in the narrow "bread-and-butter" sense of the term. "Students of medicine, perhaps more than any other class of men, and certainly more now than ever before, must be broadly liberal in order to be minutely special."

What subjects, then, should the premedical college course include? First and foremost, it should be so planned as to give a thorough training in biology, especially zoology. Most of the accurate and useful knowledge we have concerning the laws of life and death is derived from careful study and experimentation upon lower forms of life. All living things are built up of similar units called cells. Each cell is composed of the living substance, protoplasm, and upon the physical and chemical changes therein depend the phenomena of life.

In order to understand the nature and conditions of life, it is therefore further evident that one must have a thorough knowledge of physics and chemistry. As time goes on, biology in general and medicine in particular are based more and more upon the fundamental laws of physics and chemistry. Having laid a good foundation in physics, chemistry and zoology, the student is prepared for the more specialized biological sciences, anatomy, physiology and pathology; and these in turn lead up to the technical courses in clinical medicine.

Other sciences valuable for the medical student are botany and experimental psychology. Of mathematics, enough should be taken to facilitate the work in physics and chemistry. In languages, excepting an elementary knowledge of Latin (usually taken in the high school), French and German are most valuable. This is especially true of German, since a large proportion of the most important biological and medical work is published in that language. English, too, should not be neglected, for every physician should certainly understand the use of his mother tongue. Finally, a

course in free-hand drawing is exceedingly useful in many ways.

The advantages of a premedical scientific college course as outlined above are well summarized by the following quotation (from the Journal of the American Medical Association, May 27, 1911): "As a part of the education which should be preliminary to the study of medicine, courses in physics, chemistry, biology and modern languages have been especially urged during the last several years by the Council on Medical Education. The importance of the sciences named does not depend so much on the bare knowledge obtained from them as on training the student receives. In the work in these sciences, and particularly in the laboratory work, the student, under able instructors, acquires the ability to think for himself; he develops the scientific spirit; he learns the use of the microscope and becomes acquainted with the methods and value of experimentation. A reading knowledge of French and German is an invaluable aid to the medical knowledge, a large portion of which appears in the languages named. That is the minimum preliminary education which should be insisted upon in this country, not because it is the minimum requirement in every other civilized nation, which is a fact, but because the student really needs that training in order to master the complex courses in the modern medical curriculum and to do his part in solving the intricate problems which now confront the medical world. In the medical course of today the ability of the student to think, to observe and to do research work is very essential. This was not so necessary twenty-five or thirty years ago. Experience has shown that the needed qualifications are best developed by thorough courses, under expert teachers, in physics, chemistry, biology and modern languages. These are the reasons for urging those courses as a part of the minimum requirement for admission to the medical schools in this country."

### Medical Education.

Presupposing the preliminary college training as above outlined, the medical education proper may next be considered. What are the subjects included in the medical curriculum, and what facilities are necessary in order that they may be successfully taught? As previously stated, medicine is an applied science. Broadly speaking, therefore, it is necessary first to master the subject matter, the fundamental medical sciences, and then to learn how to apply these in clinical medicine, in the prevention and cure of disease. Medical education therefore falls naturally into two subdivisions, the fundamental work occupying the first two years, and the clinical work the last two (or three, if a hospital year be



added). Each of these periods will be considered briefly, following which some data will be cited whereby the relative merits of the various medical schools may be judged.

### **Fundamental Medical Education.**

The fundamental sciences upon which medicine is directly based may be grouped under three headings. The first of these, the anatomical group, includes those which concern primarily the normal form and structure of the human body. These include gross anatomy (dissection, osteology, neurology, topographic anatomy, etc.), microscopic anatomy (histology) and embryology. The second, or physiological group, includes those studies which concern primarily the normal functions of the living organism. In this group, in addition to physiology in the narrower sense, we may place organic and physiological chemistry, and also pharmacology, which deals with the effects of drugs upon the normal organism. The third group, known as pathology (including bacteriology) deals with the abnormal conditions of structure and function which are associated with disease. Finally, there is the subject of hygiene and preventive medicine, which lies in the borderland between the fundamental sciences previously mentioned, and the succeeding subjects in clinical medicine.

It is impossible within the limits of this bulletin to discuss in detail the requisites necessary for thorough instruction in the fundamental sciences. Those desiring to look into this matter more fully are referred to a work entitled "A Model Medical Curriculum," a report of a committee of one hundred leading educators, issued by the Council on Medical Education of the American Medical Association, 535 Dearborn Ave., Chicago, Ill.

It may be noted briefly that the old-fashioned didactic method of teaching by lectures and recitations from books has been completely revolutionized and replaced by the laboratory method, whereby the student directly observes and studies the phenomena for himself. The laboratory method of instruction requires for success two essential factors. First and most important, the teachers in the various laboratory subjects must be thoroughly trained specialists, who are paid salaries to devote their entire time to this work, and are not allowed to practice medicine. They should moreover be active investigators whose enthusiasm will be an inspiration to their students. Too much emphasis cannot be laid upon "the man behind the gun." The second factor includes the facilities, buildings, equipment and materials for thorough work in each of the laboratories for the various fundamental medical sciences. These two factors, the full-time, thoroughly trained

teachers and the numerous well-equipped laboratories are so costly as to be out of the reach of most medical schools, but they are necessary in order to obtain the thorough laboratory instruction which is essential in modern medical education.

Another necessity, the importance of which is becoming more clearly recognized, is a good medical library. This should include several thousand well chosen volumes for reference, including files of one hundred or more of the leading medical periodicals of the world. A good medical library is also very expensive, but is necessary for the best work in instruction, and absolutely essential for research.

### Clinical Medical Education.

When the student has completed the first two years of the curriculum and has mastered the fundamental medical sciences, he is familiar with the structure and functions of the human body, both normal and abnormal, and is ready to learn how to apply these principles at the bedside for the alleviation and cure of disease. This final period of medical education is designated clinical medicine. It includes two broad groups, internal medicine and surgery, each with numerous subdivisions. Here also lack of space prevents a discussion of each of the numerous special branches, for a full consideration of which the reader may consult the work "A Model Medical Curriculum" previously referred to. In passing, however, it may be remarked that for successful clinical teaching the essentials are very similar to those already stated for the laboratory sciences. The teachers should be skilled and experienced, each a recognized authority in his particular line. Here also it is highly desirable that salaries should be paid so that the teacher's whole time may be devoted to instruction and investigation, though very few schools are financially able to carry out this policy. The laboratory of the clinical work is the hospital, and it is essential for successful clinical work that each school should own or absolutely control the clinical facilities in a large hospital with a sufficient number of beds in each of the various clinical branches. Certain clinical laboratories must also be provided.

On account of the heavy expenses involved in providing salaried teachers, laboratory and hospital facilities, it is axiomatic that no school can depend solely upon students' fees for support. Private endowment or state support on a general scale is essential to provide medical education fully up to modern standards.

The minimum facilities considered absolutely necessary in order that a medical college may be able to give a satisfactory training up to modern standards in both fundamental and clinical

subjects are, according to the Council on Medical Education of the American Medical Association, as follows:

**Outline of the Essentials of An Acceptable Medical College.**

1. Strict enforcement of all standards and requirements, the college itself to be held responsible for any instances where they are not enforced.

2. A requirement for admission of at least a four-year high-school education superimposed on eight years of grammar school work, or the actual equivalent education, this to consist of 14 units as defined by the College Entrance Examination Board and required by the Carnegie Foundation for the Advancement of Teaching.

3. As soon as conditions warrant, the minimum requirement for admission should be enlarged to include at least one year's college work each in physics, chemistry and biology and reading knowledge of at least one modern language, preferably German or French.

4. A requirement that students be in actual attendance in the college within the first week of each annual session and thereafter.

5. That actual attendance at classes be insisted on except for good cause, such as for sickness, and that no credit be given under any circumstances for less than 80 per cent of attendance on each course.

6. That advanced standing be granted only to students of other acceptable colleges and that in granting advanced standing there shall be no discrimination against the college's full-course students.

7. Careful and intelligent supervision of the entire school by a dean or other executive officer who holds, and has sufficient authority to carry out, fair ideals of medical education as interpreted by modern demands.

8. A good system of records showing conveniently the credentials, attendance, grades and accounts of the students.

9. A fully graded course covering four years of at least 30 weeks each, exclusive of holidays, and at least 30 hours per week of actual work; this course should be clearly set forth in a carefully prepared and printed schedule of lectures and classes.

10. Two years of work consisting largely of laboratory work in thoroughly equipped laboratories in anatomy, histology, embryology, physiology, chemistry (inorganic, organic and physiologic), bacteriology, pathology, pharmacology, therapeutics and clinical diagnosis.

11. Two years of clinical work largely in hospitals and dis-

pensaries, with thorough courses in internal medicine (including physical diagnosis, pediatrics, nervous and mental diseases), surgery (including surgical anatomy and operative surgery on the cadaver), obstetrics, gynecology, laryngology, rhinology, ophthalmology, otology, dermatology, hygiene and medical jurisprudence.

12. At least six expert, thoroughly trained instructors in the laboratory branches, salaried so they may devote their entire time to instruction and to that research without which they cannot well keep up with the rapid progress being made in their subjects. These instructors should rank sufficiently high to have some voice in the conduct of the college. There should also be a sufficient number of assistants in each department to look after the less important details.

13. The medical teaching should be of at least the same degree of excellence as obtains in our recognized liberal arts colleges and technical schools.

14. The members of the faculty, with a few allowable exceptions, should be graduates of institutions recognized as medical colleges and should have had a training in all departments of medicine. They should be appointed because of their ability as teachers and not because they happen to be on the attending staff of some hospital or for other like reasons.

15. The college should own or entirely control a hospital in order that students may come into close and extended contact with patients under the supervision of the attending staff. The hospital should have a sufficiently large number of patients to permit the student to see and study the common varieties of surgical and medical cases as well as a fair number in each of the specialties.

16. The college should have easily accessible hospital facilities of a daily average of not less than 200 patients which can be utilized for clinical teaching (for senior classes of 100 students or less), these patients to represent in fair proportion all departments of medicine.

17. The college should have additional hospital facilities for children's diseases, contagious diseases and nervous and mental diseases.

18. Facilities for at least five maternity cases for each senior student, who should have actual charge of these cases under the supervision of the attending physician.

19. Facilities for at least 30 autopsies during each college session (for senior classes of 100 students or less).

20. A dispensary, or out-patient department, under the control of the college, the attendance to be a daily average of 60 cases (for senior classes of 100 students or less), the patients to

be carefully classified, good histories and records of the patients to be kept and the material to be well used.

21. The college should have a working medical library to include the more modern text and reference books and 10 or more leading medical periodicals; the library room to be easily accessible to students during all or the greater part of the day; to have suitable tables and chairs and to have an attendant in charge.

22. A working medical museum having its various anatomic, embryologic, pathologic and other specimens carefully prepared, labeled and indexed so that any specimen may be easily found and employed for teaching purposes.

23. A supply of such useful auxiliary apparatus as a stereopticon, a reflectoscope, carefully prepared charts, embryologic or other models, manikins, dummies for use in bandaging, a Roentgen ray or other apparatus now so generally used in medical teaching.

24. The college should show evidences of reasonably modern methods in all departments and evidences that the equipment and facilities are being intelligently used in the training of medical students.

25. A statement in which the college's requirements for admission, tuition, time of attendance on the classes, sessions and graduation are clearly set forth should be given, together with complete lists of its matriculants and latest graduating class in regular annual catalogues or announcements.

### Criteria for Judging Schools.

Having in mind the essential elements involved in a thorough premedical and medical education, it devolves upon the prospective student to select the school which he will attend. This is a critical problem, and grave mistakes are often made through lack of knowledge regarding the various schools. With regard to the premedical college work, the problem is less difficult, but it is essential to choose a college well equipped for teaching the fundamental sciences of biology, physics and chemistry. In general, these are best taught in the stronger universities, such as those in the Association of American Universities.\*

In choosing a school for the medical curriculum proper, the problem is much more complicated. There are in the United

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\* This Association includes the following universities: California, Catholic University, Chicago, Clark, Columbia, Cornell, Harvard, Illinois, Indiana, Iowa, Johns Hopkins, Kansas, Michigan, Minnesota, Missouri, Nebraska, Stanford, Pennsylvania, Princeton, Virginia, Wisconsin and Yale.



States about 120 medical colleges, good, bad and indifferent, whose relative merits it is difficult for the student to judge. Bearing in mind the essential principles previously outlined, the most important information desirable is indicated in the following questions:

1. As to organization, is it an independent medical school, or an integral (not merely nominal) department of a strong university?

2. What is the amount of the income and expenditure? Is the income dependent solely upon students' fees, or is it supported liberally by endowment or state appropriations?

3. What is the extent and character of the laboratory and clinical facilities, its buildings, equipment, library, etc.?

4. What is the character of the faculty? Are the teachers fulltime salaried experts, or are they allowed to engage in the private practice of medicine? To what extent are they contributing to the advancement of medical science by original research?

5. Do the entrance requirements include a minimum of two years of college work, and are they strictly enforced?

6. What is the character of the curriculum, stress laid upon practical work in laboratory and clinics, opportunity for research, etc.?

7. Are the classes large or small, allowing individual attention to each student?

8. What are the tuition fees and expenses?

9. What is the general standing of the school, its rating by competent and disinterested organizations, and its efficiency as measured by the results of the examination of its graduates before the various State licensing boards?

### Where to Find Information.

Where can the prospective student find reliable data in answer to the preceding questions? Much can of course be learned from the catalogues of the various schools, but in many cases it must be confessed that the information contained therein is incomplete, and even misleading. It may therefore be of service to those interested in this matter to know where to find reliable data from disinterested sources.

In the first place, a list of the medical schools of the United States together with brief information (furnished, however, by the schools themselves) is published in the chapter on "Professional Schools" in the annual report of the Commissioner of Education, U. S. Bureau of Education, Department of the Interior, Washing-

ton, D. C. A reprint of this chapter is obtainable and is useful for reference.

Similar information, which is more complete in some respects, is published each year during August in the "Educational Number" of the Journal of the American Medical Association (Chicago).

The Council on Medical Education of the A. M. A. has made a thorough personal inspection and investigation of the various medical schools of the country, and has rated them in three classes:

Class A, acceptable medical colleges, including about 70 schools; Class B, medical colleges needing certain improvements to make them acceptable (about 25 schools); and Class C, medical colleges which would require a complete reorganization to make them acceptable (about 25 schools). A copy of the rating, naming the schools in each class, can be obtained from the Secretary of the Council, 535 Dearborn Ave., Chicago. In this rating, the various schools are judged with considerable leniency.

Another basis for judgment is to be found in the membership of the Association of American Medical Colleges, with about 50 schools, including nearly all of the better class. A list of the members is published annually in the Educational Number of the Journal A. M. A. above referred to, or may be obtained from the Secretary, Dr. F. C. Zapffe, 3431 Lexington St., Chicago, Ill.

Information showing the percentage of failures of graduates of the various schools in examinations before the different state licensing boards is published annually in the "State Board Number" of the Journal A. M. A. (Chicago). The most recent issue of this number is dated May 25, 1912. Those interested especially in Missouri schools will find considerable information in the report of the State Council on Medical Education, published in the July, 1911, number of the Journal of the Missouri State Medical Association (St. Louis). A similar report is published each year.

By far the most full, frank and instructive account of the medical situation is to be found in the bulletin entitled "Medical Education in the United States and Canada; a Report to the Carnegie Foundation for the Advancement of Teaching by Abraham Flexner." This is a large volume (346 pages) published in 1910, and may be obtained by sending 17 cents for postage (address: 576 Fifth Ave., New York City). This report is divided into two parts. The first part deals with the general principles of medical education, ideals versus present conditions, organization and equipment of medical schools, course of study, medical sects, etc. The second part gives a detailed and critical account of the various schools, including the defects as well as the good points of each. This report, which is based upon an actual inspection of each

school, will be found exceedingly instructive and useful to all interested in medical education.

A new report, to be published soon by the Carnegie Foundation, will deal with a comparative study of medical education in the leading European countries.

## **THE SCHOOL OF MEDICINE**

In the foregoing pages the profession of medicine has been considered with especial reference to the principles underlying sound medical education, and the facilities necessary according to modern standards. Attention is now called to the School of Medicine of the University of Missouri, and to the advantages which it offers in providing facilities for obtaining at low cost both premedical and medical education measuring up to the high standards previously outlined.

### **Aim of the School of Medicine.**

The aim of the School of Medicine is threefold:

(1) To give a thorough laboratory training in those scientific subjects which are fundamental to medicine and form an indispensable preparation for the clinical work.

(2) To contribute to the advancement of medicine by original investigation in the various sciences upon which modern medicine is based.

(3) To promote the diffusion of medical knowledge among the citizens of the State. For this special purpose, the department of Preventive Medicine has recently been established.

### **PREVENTIVE MEDICINE.**

The purpose of this department is to present to the people of the State the well established medical facts pertaining to the prevention of infectious diseases, and to assist, so far as is possible, the general advancement of medicine. Teaching of the masses can best be accomplished in the grade schools, high schools, etc., and by the newspapers. Courses in preventive medicine are offered in the University each semester and in the Summer Session especially to teachers and to students in journalism. These courses are also open to all students in the University interested in preventive medicine.

A bureau of information will in the near future be established. This office will upon request furnish to the citizens of Missouri information pertaining to practical points regarding the prevention

of infectious diseases. A laboratory for clinical pathology will also soon be established. The services of the bureau of information and the laboratory will be free of charge to all citizens of Missouri.

The bureau of information is intended to give immediate assistance to the people while the more thorough but slower method of instruction in preventive medicine is being established in the various schools. To illustrate: it is known that a patient just recovering from typhoid fever is for several months heavily infected with typhoid bacilli and is during this time a source of infection. The feces of such a patient should be examined from time to time to determine when free from typhoid bacilli. Until free, the fecal matter should be disinfected. On account of the expense this procedure is practically never carried out. The bureau of information and laboratory will attempt to perform these services and similar work along other lines free of charge, with the hope that some progress in the prevention of infectious diseases may be made along practical lines.

### HISTORICAL STATEMENT.

The Medical Department of Kemper College ("McDowell Medical College"), founded in St. Louis in 1840, was the first medical school established west of the Mississippi River. In 1845 this school became the Medical Department of the University of Missouri. In 1855, however, it was discontinued; but was re-established in Columbia in December, 1872. The curriculum was at first only two years in length, but was extended to three years in 1891, and to the full four years in 1899.

Owing to the limited clinical facilities at present, the last two (clinical) years of the medical curriculum have been temporarily suspended. A plan for the establishment of a general State Hospital has been adopted by the University, and the clinical portion of the work will be resumed as soon as it is practicable to establish it with adequate clinical facilities. In the meantime, the first two years of the medical curriculum will be continued at Columbia and still further strengthened. On the completion of this work, a certificate is given which will admit the student to advanced standing with full credit in other medical schools, where the clinical work of the last two years may be completed.

The School of Medicine has always stood for the highest standards of medical education, and was a pioneer in introducing and developing the laboratory method. Laboratory work in anatomy, chemistry, and microscopy was required of students from the date of re-establishment in 1872. A few years later laboratory

work in pathology and in physiology was added, and in 1891 the laboratories of histology and bacteriology were established. The School of Medicine of the University of Missouri was also one of the first schools to place these fundamental medical sciences in charge of specialists who are not allowed to practice medicine, but devote their time exclusively to teaching and investigation.

### Organization and Support.

As has been previously emphasized, the nature of the organization and support of a medical school is a matter of primary importance. The Medical School of the University of Missouri is an integral part of the University, whose total income from all sources is about \$850,000 a year. The Medical School is supported from this income, about \$30,000 being expended annually for this purpose (including Hospital), while less than \$3,000 is collected in fees from the medical students.

As a result of this liberal support, it has been possible for many years to organize and maintain the medical work on a proper University basis. The faculty is composed of eminent specialists, who are not allowed to engage in the practice of medicine, but devote their entire time to teaching and investigation. The course of study is carefully planned, modern laboratory methods being used throughout. The high standards of admission result in small classes (not over twenty-five in each) prepared for the highest type of work. Women are admitted on equal terms with men.

In the following pages, more detailed information will be given concerning the faculty, the buildings and equipment, and the courses of study. As already stated, the character and training of the faculty is a matter of the greatest importance, and some brief information upon this topic is therefore included with the following list of the members of the Medical Faculty.

### FACULTY OF THE SCHOOL OF MEDICINE.

ALBERT ROSS HILL, A. B., Ph. D., LL. D.,

President of the University and Professor of Educational Psychology.

A. B., Dalhousie University, 1892; Scholar in Philosophy, Cornell University, 1892-3; Student at Heidelberg, Berlin, and Strassburg University, 1893-4; Fellow in Philosophy, Cornell University, 1894-5; Ph. D., Cornell University, 1895; Student in Clark University, Summer of 1896; LL. D., University of South Carolina, 1905, Dalhousie University, 1908, and Westminster College, 1909; Professor of Psychology and Education, State Normal School,



Oshkosh, Wisconsin, 1895-7; Associate Professor of Philosophy, University of Nebraska, 1897-8; Professor of Philosophy and Director of Psychological Laboratories, 1898-1903; Head of the Department of Education, University of Missouri, 1903-4; Professor of Educational Psychology, and Dean of the Teachers College, 1904-07; Professor of Philosophy of Education, Director of the School of Education, and Dean of the College of Arts and Sciences, Cornell University, 1907-08; Present position, 1908-.

CLARENCE MARTIN JACKSON, B. S., M. S., M. D.,

Professor of Anatomy and Histology, and Dean of the Faculty.

B. S., University of Missouri, 1898, M. S., 1899, M. D. 1900; Student, University of Leipzig, 1903-4; University of Berlin, 1904; Fellow in Biology, University of Missouri, 1897-9; Instructor in Anatomy, 1899-1900; Assistant Professor (incharge) of Anatomy and Histology, 1900-02; Professor of Anatomy and Histology, 1902-, Junior Dean of the Faculty of Medicine, 1906-09; Present position, 1909-.

SIDNEY CALVERT, B. Sc., A. M.,

Professor of Organic Chemistry.

B. Sc., McGill University, 1890; Graduate Student, Harvard University, 1890-4, A. M., 1892, Assistant in Chemistry, 1892-4, Private Research Assistant, 1892-4; Assistant in Chemistry, Harvard Summer School, 1894; Student, University of Freiburg, 1901-2; Assistant Professor of Chemistry, University of Missouri, 1894-1902, Assistant Professor of Organic Chemistry, 1905-06; present position, 1906-.

WILLIAM JEPHTHA CALVERT, A. B., M. D.,

Professor of Preventive Medicine.

A. B., University of Kentucky, 1893; M. D., Johns Hopkins Medical School, 1898; 1st Lieutenant and Assistant Surgeon, U. S. Army, 1899-1902; In charge of the Laboratory of Board of Health, Manila, P. I., 1900-01; Lecturer on Tropical Diseases, Washington University, St. Louis, 1902-03; Assistant Professor of Internal Medicine, University of Missouri, 1903-08; Professor of Physical Diagnosis and Clinical Pathology, 1908-09; Professor of Internal Medicine, Baylor University, 1909-11; present position, 1911-.

DAVID HOUGH DOLLEY, A. B., A. M., M. D.,

Professor of Pathology and Bacteriology.

A. B., Randolph-Macon, 1897, A. M., 1898; M. D., Johns Hopkins Medical School, 1902; Resident Pathologist, St. Vincent's Charity Hospital, 1902-3; Assistant Demonstrator of Pathology, Western Reserve University, and Resident Pathologist, Lakeside Hospital, Cleveland, 1903-4; Professor of Histology and Pathology, University of North Carolina, 1906-10; present position, 1910-.

CHARLES WILSON GREENE, A. B., A. M., Ph. D.,

Professor of Physiology and Pharmacology.

A. B., Leland Stanford Jr. University, 1892, A. M., 1893; Ph. D., Johns Hopkins University, 1898; Instructor in Physiology, Leland Stanford Jr. University, 1893-8, Assistant Professor, 1898-1900; Instructor in Zoology, Marine Biological Laboratory, 1896 and 1897, in Physiology, 1900; Fellow in Physiology, Johns Hopkins University, 1897-8; Temporary Assistant, U. S. Bureau of Fisheries, 1901-; present position, 1900-.

GEORGE LEFEVRE, A. B., Ph. D.,

Professor of Zoology.

A. B., Johns Hopkins University, 1891, Fellow, 1894-5, Bruce Fellow, 1895-7, Ph. D., 1896; Assistant in Zoology and Embryology, 1897-8; Instructor in Zoology, Marine Biological Laboratory, Woods Hole, Mass., 1898-9; Member of Staff of Investigation, 1906-; Temporary Assistant, U. S. Bureau of Fisheries, 1907-; present position, 1899-.

WOODSON MOSS, M. D., LL. D.,

Professor of Principles of Medicine, and University Physician.

M. D., University of Missouri, 1874, LL. D., 1901, Instructor in Medicine and Demonstrator of Anatomy, 1875-8; Professor of Anatomy and Demonstrator, 1878-83; Professor of Anatomy and Physiology, 1883-91; studied in Europe, 1890; Professor of Anatomy and the Practice of Medicine, University of Missouri, 1891-1900, Tutor to the University, 1906-; Professor of the Practice of Medicine and Therapeutics, 1900-09; present position, 1910-.

GUY L. NOYES, M. D.,

Superintendent of the Parker Memorial Hospital.

M. D., University of Vermont, 1894; M. D., University of Michigan, 1901; House Surgeon, Mary Fletcher Hospital, 1895; First Assistant Physician, Northern Michigan Asylum, 1896-1900; Assistant in Ophthalmology, 1901, Demonstrator of Ophthalmic and Aural Surgery, University of Michigan, 1902; Harvard University Medical School, Summer Session, 1905; Professor of Diseases of the Eye and Ear, University of Missouri, 1902-09; present position, 1906-.

FRANKLIN PARADISE JOHNSON, A. B., A. M., Ph. D.,

Assistant Professor of Anatomy.

A. B., University of Missouri, 1908; A. M., Harvard University, 1910, Ph. D., 1912; Student, University of Freiburg, Summer, 1911; Student Assistant in Anatomy, University of Missouri, 1907-8; Austin Fellow in Histology and Embryology, Harvard University, 1908-10, Instructor in Histology and Embryology, 1910-12; Assist-

ant Professor of Anatomy, University of Missouri, beginning September, 1912.

LAWSON GENTRY LOWREY, A. B., A. M.,

Acting Assistant Professor of Anatomy.

A. B., University of Missouri, 1909, A. M., 1910; Assistant in Anatomy, University of Missouri, 1909-10; Acting Professor of Anatomy, University of Utah, 1910-11; present position, 1911-12.

OLIVER WENDELL HOLMES MITCHELL, M. D.,

Assistant Professor of Pathology and Bacteriology.

M. D., University of Missouri, 1908, Student Assistant in Pathology and Bacteriology, 1906-8, Assistant in Pathology and Anaesthetist to Parker Memorial Hospital, 1908-09; Student and Laboratory Assistant in Pathology, Rush Medical College, 1909; Instructor in Pathology and Bacteriology, University of Missouri, 1909-10; present position, 1911-.

MATTHEW STEEL, B. S., M. S., Ph. D.,

Acting Assistant Professor of Physiological Chemistry.

B. S., New Mexico College of Agriculture, 1901, M. S., 1902; Ph. D., Columbia University, 1908; Scientific Aid, U. S. Department of Agriculture, 1903-4; Assistant Chemist, Rhode Island Experiment Station, 1904-5; Soil Expert, U. S. Bureau of Soils, 1905-6; Assistant in Biological Chemistry, Columbia University (College of Physicians and Surgeons), 1907-8, and Instructor in Biological Chemistry, 1908-10; in charge Dairy Research Laboratory of U. S. Department Agriculture at University of Missouri, 1910-11; present position, 1911-.

GEORGE WASHINGTON TANNREUTHER, A.B., A.M., Ph.D.,  
Instructor in Zoology.

A. B., Manchester College, 1900, A. M., Antioch College, 1901; Ph. D., University of Chicago, 1908, Laboratory Assistant in Zoology, 1904, Fellow in Zoology, 1904-05; Assistant in Zoology, University of Missouri, 1905-09; present position, 1909-.

THOMAS JOHANNES HELDT, A. B., A. M.,

A. B., University of Missouri, 1910, A. M., 1912; present position, 1910-.

FLOYD AUGUST MARTIN, A. B., A. M.,

Assistant in Pathology and Bacteriology.

A. B., University of Missouri, 1911, A. M., 1912, Student Assistant in Pathology, 1910-11; present position, 1911-12.

WILLIAM FREDERICK SKAER, B. S., A. B.,

Assistant in Physiology.

B. S., Central Wesleyan College, 1909; A. B., University of Missouri, 1911; present position, 1911-12.

SAMUEL HARRISON SNIDER, A. B.,

Student Assistant in Anatomy.

B. Pd., State Normal School, Cape Girardeau, 1910; present position, 1911-12.

## BUILDINGS AND EQUIPMENT.

Next to the faculty, among the factors which determine the efficiency, come the buildings and material equipment. The School of Medicine is located upon the same campus with the other divisions of the University. Of the various buildings (over twenty) on the campus, a group of three—the Medical Laboratory Building, the Animal House, and the Parker Memorial Hospital,—are devoted primarily to the School of Medicine. These will be described in some detail. Several other buildings (Chemistry, Zoology, etc.) are also utilized in part for medical instruction.

### Medical Laboratory Building.

This is a new stone and brick building, 48x150 feet, three stories high. It was especially designed for the medical laboratories, and is well equipped to meet the needs of modern laboratory instruction and research. The following is a brief list of the various rooms and equipment in this building.

The department of anatomy and histology occupies (1) a large dissecting room, well lighted and ventilated, with dissecting tables, students' lockers, display cases for specimens, models, etc.; (2) an advanced anatomical laboratory, specially equipped for the study of topographic anatomy, including serial sections through formalin hardened bodies; (3) histological laboratory (with preparation and store-room in connection), thoroughly equipped with lockers, tables, microscopes, microtomes, and other apparatus for instruction and research in microscopic work; (4) lecture room for anatomy and histology, equipped with Auzoux manikin, projection apparatus, charts, etc.; (5) museum and study room, with adjacent preparation room, containing a large number of models and specimens in human anatomy; (6) professor's office; (7) research laboratory; (8) embalming and storage rooms, with an abundance of well-preserved cadavers for the work in dissection.

The department of physiology, physiological chemistry, and pharmacology occupies the following rooms: (1) A large laboratory (with adjoining store-room) equipped with tables, lockers, and sets of apparatus for the students in physiology and pharmacology; (2) a blood-pressure room, particularly for mammalian experiments; (3) a research laboratory, thoroughly equipped, for advanced students in physiology and pharmacology; (4) professor's office, with adjacent research laboratory; (5) professor's office

and research laboratory in physiological chemistry; (6) large students' laboratory with adjacent store-room, thoroughly equipped for work in physiological chemistry; (7) animal room; (8) mechanic's shop; (9) lecture room (in common with pathology).

The department of pathology and bacteriology occupies (1) a large students' laboratory for bacteriology and pathological histology, well equipped with lockers, microscopes with oil immersion lenses, etc.; (2) a preparation room for bacteriology, with sterilizers, incubators, etc.; (3) private laboratory, well equipped for research work in pathology; (4) large room for autopsies and work in gross pathology; including a collection of pathological specimens in glass cases; (5) an animal room and store-room; (6) office and research laboratory for bacteriology; (7) lecture room (in common with physiology).

### **Medical Library.**

No medical school of today can be considered well equipped without a good library. The Medical Library is placed in a room on the upper floor of the Medical Laboratory Building, and is open eight hours daily, except Sunday. It contains about 5000 bound volumes, and a large number of pamphlets. The principal medical works of reference are included and the leading medical periodicals of the world (about 100 in number) are received regularly and placed on file. Complete sets of most of these journals are available. The main University Library also contains many works of interest and value to the medical sciences.

A complete catalogue of the books and periodicals in the Medical Library will be furnished free by the University Librarian upon request. The journals and books in the Library will be lent free to any reputable physician of the State. The borrower is required to pay the transportation charges both ways.

Provision is also made for sending out circulating libraries to county medical societies arranged in circuits. For information, address the University Librarian, or the Dean of the School of Medicine.

### **Animal House.**

The animal house is located near the Medical Laboratory Building. It is a brick structure, well lighted, heated and ventilated, with plumbing and other conveniences. This building provides excellent facilities for rearing and preserving animals, and for investigations in the various lines of medical science. It is of especial value for the experimental work in physiology, pathology and bacteriology.



### Other Buildings.

In several other buildings on the University campus (chemistry, zoology, etc.), instruction is offered in many lines open to medical students as electives, and of especial service to those taking the combined course in Medicine and in Arts and Science. The Gymnasium and athletic grounds are open for the use of all students, and special opportunities are offered to those interested.

### THE PARKER MEMORIAL HOSPITAL.

Guy L. Noyes, M. D.....Superintendent  
Frances Shouse, R. N.....Principal of Training School for Nurses

By the gift of Mr. Wm. L. Parker, the University has an excellent Hospital, which has now been in operation for 12 years. In the words of the donor, the Hospital is "for the benefit of the School of Medicine." The building is a handsome, modern structure, conveniently located on high ground at the west side of the campus.

A surgical amphitheatre adjoining the Hospital has been provided by the gift of Mr. Adolphus Busch, of St. Louis. It is supplied with accessory rooms for sterilizing, anaesthetizing, etc.

The Parker Memorial Hospital is owned and operated by the University primarily for the benefit of the University students. It is also open to the sick of Missouri for the treatment of acute and chronic curable diseases. Those who suffer from chronic incurable, or dangerous communicable diseases, are not admitted to the Hospital.

Patients are admitted to the Hospital at any hour of the day. Those living outside of Columbia should make application in advance for admission, preferably through their family physician, who should send with the application for admission a brief statement concerning the nature of the patient's illness.

Application for admission should be addressed to the Superintendent of the Hospital.

Lectures and demonstrations are given from time to time in the Hospital for the benefit of the students of medicine and the nurses in training.

### Rates and Terms.

The following rates are for the maintenance of patients who are not students of the University, including bed, board, and general nursing:

General Medical and Surgical Cases. Single rooms, \$15.00 a week and upward. Wards, \$10.00 a week and upward.

Obstetrical Cases, \$25.00 a week.

Special Nursing, by pupil nurses, may be had at the rate of \$3.00 a day.

Extra Fees will be charged for medicines, dressings, and the use of the operating room or its equipment. Fees for maintenance are payable invariably in advance.

Physicians who hold consultation with or give treatment to patients not resident in the Hospital, and require therefore the attendance of a nurse or the use of the equipment of the Hospital, must pay a minimum fee of \$1.00 for such privilege.

Students of the University of Missouri, regularly enrolled as such are (with certain exceptions) given free Hospital care. Those who can afford to do so are expected to pay for medical services.

The University Physician gives free medical advice and service to students of the University only, in his office at the Hospital, where he may be seen at regular daily hours, which are announced at the beginning of each school year.

### **The Training School for Nurses.**

The School for Nurses of the University of Missouri was organized in 1901. The school is conducted in connection with the Parker Memorial Hospital.

Pupil nurses receive their training in the Hospital and laboratories of the University. Nurses have access to the libraries and museums of the University at all times.

The course of instruction is thorough and familiarizes the pupils with the theory and practice of nursing in all its details. The course covers a period of three years of twelve months each. The first three months of residence in the school are probationary, and at the expiration of that time the pupil is regularly enrolled as a member of the School, provided she is found to be acceptable.

A special announcement giving detailed information concerning the Training School for Nurses will be sent in response to requests for the same, addressed to the Principal of the Training School for Nurses, Parker Memorial Hospital, University of Missouri, Columbia, Missouri.

## Medical Curriculum.

FIRST YEAR.	Semester credits		Total hours	
	1st Sem.	2nd Sem.	Lecture.	Laboratory
Dissection .....	9	3	34	425
Normal Histology .....	4	4	34	204
Organic Chemistry .....	3	3	68	85
Vertebrate Embryology .....		3	17	85
Neurology .....		3	17	85
Totals .....	16	16	170	884
SECOND YEAR				
Topographic Anatomy .....		2	.....	85
Physiology and Physiological Chemistry .....	12	.....	85	297
Pharmacology .....		4	34	85
Pathological Bacteriology .....	4	.....	34	85
Pathology .....		8	17	297
Hygiene .....		3	51	.....
Principles of Medicine.....	1	1	.....	104
Totals .....	17	18	221	953

The work above outlined in the regular medical curriculum provides a thorough training in the various subjects usually included in the first two years of medicine. It meets the requirements of the Association of American Medical Colleges (of which this School is a member) and follows closely the ideal courses in the laboratory subjects recommended by the Council on Medical Education of the American Medical Association. The individual courses are described in detail on the following pages.

## Courses in Detail.

Courses preceded by number with the letter a attached, thus: 100a, are given the first semester only. Those preceded by a number with the letter b attached, thus: 100b, are given the second semester only. Those preceded merely by a number are continuous courses and are given both semesters. The number of hours' credit given for a course for each semester is indicated by the

Arabic numerals following the statement of the course. Courses numbered 200 and above are strictly graduate in character.

For schedule of days and hours, application should be made to the Registrar after August 1.

### ANATOMY AND HISTOLOGY.

102. **Dissection.** This course includes the dissection and gross anatomy of the entire human body, excepting the central nervous system and the sense organs. For use in the study of osteology, which is correlated with the work of dissection, a complete disarticulated human skeleton is issued to every two students. Fee for use of the skeleton, \$2.00 (deposit of \$10.00 required). Laboratory fee in addition, \$14.00. First Year. Credit nine hours first semester, three hours second semester. Mr. Jackson; Mr. Heldt.

103. **Normal Histology.** A study of the microscopic anatomy of the body. Each student prepares, stains and mounts permanently about 100 specimens for study. Laboratory fee, \$3.50 each semester. First Year. (4). Mr. Johnson.

104a and 104b. **Neurology.** A study of the central nervous system and sense organs. Laboratory, with one lecture a week. Laboratory fee, \$3.50. First Year. (3). Mr. Jackson; Mr. Johnson.

105b. **Topographic Anatomy.** A study of the topography of the various organs by means of serial sections through the entire body. Laboratory fee, \$4.50. Second Year. (2) Mr. Jackson.

206. **Advanced Anatomy, Histology or Embryology.** The amount and character of the work will be varied to suit individual needs. This course is open only to students who have had the elementary courses in anatomy, histology, or embryology. Laboratory. Elective.

207. **Research.** Problems will be assigned to students prepared for investigation in anatomy, histology or human embryology. A reading knowledge of German is required, and a reading knowledge of French is very desirable. In connection with this course, a seminary is held once a week, at which reports on current literature and research work in progress are discussed. Elective.

### CHEMISTRY.

111. **Organic Chemistry.** The aim of this course is to give a general survey of the principal classes of organic compounds, such as hydrocarbons, alcohols, phenols, ethers, aldehydes, acids, esters,

fats, carbohydrates, etc. In so far as it is possible, the student prepares in the laboratory representatives of the various classes of compounds and studies their reactions. Two lectures and one laboratory period a week. First year. (3). Mr. Sidney Calvert.

For other courses in chemistry, which may be elected, see courses in chemistry, College of Arts and Science.

## MEDICINE.

1. **Principles of Medicine.** In this course physical diagnosis is taught, and the principles of medicine and therapeutics are illustrated by means of a general medical clinic held at the Parker Memorial Hospital three times a week. Second Year. (1). Mr. Moss.

## PATHOLOGY AND BACTERIOLOGY.

102a. **Pathological Bacteriology.** (Prerequisite, Botany 3a or 3b). In the laboratory work all the important species of pathogenic organisms are supplied for individual study. In addition, practical instruction is given in the bacteriological examination of pathological exudates and of water, milk, etc. The lectures, along with the consideration of biological characteristics, are aimed to be introductory to general pathology. Two lectures and two laboratory periods a week. (4). Second Year. Mr. Dolley; Mr. Mitchell.

103b. **Pathology and Pathological Anatomy.** This is essentially a laboratory course, supplemented by lectures and recitations, for the histological study of the general and special manifestations of disease. Each student is supplied with about three hundred sections which become his property. The corresponding gross material is afforded by a well equipped museum and by autopsies. Students assist in rotation at autopsies and are required to report independently in the customary form on their findings. Eight laboratory periods a week, including the lectures. (8) Mr. Dolley; Mr. Mitchell. Second Year.

201. **Advanced Pathology.** (Prerequisite, courses 102, and 103b). Choice may be made of either medical bacteriology or pathological anatomy. The amount and character of the work will depend upon the needs and qualifications of the student. In connection, opportunity will be afforded for practical experience in the handling of all kinds of morbid material. Hours to be arranged. Mr. Dolley; Mr. Mitchell. Elective.

202. **Research.** Opportunity is offered to students sufficiently prepared for original investigation of unsolved problems in the



fields of bacteriology, pathology and pathological physiology. A reading knowledge of German is required and one of French is recommended. A seminary is held once a week. Elective. Mr. Dolley.

203. **Normal and Abnormal Neuro-cytology.** The application of the general principles and theories of biology to the nerve cell in health and disease. The work will necessarily consist largely of original investigation and will be adjusted to the training of the student. Hours to be arranged. Elective. Mr. Dolley.

### PREVENTIVE MEDICINE.

1a and 1b. **Elementary Hygiene and Preventive Medicine.** This course includes the general principles of personal and public health, and of the application of preventive measures against disease. Open as an elective to the students of all Divisions of the University. (No medical credit.) Lectures and demonstrations. (2). Mr. W. J. Calvert. Elective.

101b. **General Hygiene.** (Prerequisite, Pathological Bacteriology, 102a). This course deals in a more detailed manner with the fundamental principles of public and personal hygiene and with the regulatory measures directed toward the improvement of general health as needed by physicians and public health officers. Three lectures a week. Second Year. (3). Mr. W. J. Calvert.

### PHYSIOLOGY AND PHARMACOLOGY.

102a. **General Physiological Chemistry.** The physiology and physiological chemistry of the proteins; of muscle, nerve, and connective tissues; of the cells; of blood, secretions, digestion, absorption, intermediary metabolism, and excretion; of nutrition, heat production, and heat regulation. A metabolism experiment, with a quantitative examination of the urine is required. Second Year. (4). Mr. Steel.

103a. **Experimental Physiology.** The physiology of muscle and nerve, circulation, respiration, nervous system and sense organs. (6). Second Year. Mr. Greene; Mr. Steel; Mr. Skaer.

104b. **Advanced Physiological Chemistry.** A course supplementing and extending course 102a. The preparation and chemistry of the proteins; a qualitative and quantitative study of the tissues and secretions, of enzymes, of putrefaction and putrefactive products; analysis of typical foods, and the detection of food preservatives and adulterants. The prosecution of a short investiga-

tion and formal report on the same are required. (4). Mr. Steel. Elective.

105b. **Pharmacology.** This course presents the physiological action of drugs from the experimental point of view. The demonstrations are made on man and the lower animals. Second Year. (4). Mr. Greene; Mr. Skaer.

107a or 107b. **Toxicology.** (Prerequisites 104b or 105b). (2) or (3). Mr. Steel. Elective.

208. **Journal Club.** (1) Mr. Greene. Elective.

209a. **The Pharmacology of the Circulatory System.** (3). Mr. Greene. Elective.

210. **Advanced Physiology.** Advanced courses in physiology, physiological chemistry and pharmacology. Individual problems will be assigned to students of sufficient preparation. Hours to be arranged. Mr. Greene; Mr. Steel. Elective.

211. **Investigation.** Opportunity is offered for research in questions of current interest in either of the fields represented. Mr. Greene; Mr. Steel. Elective.

## ZOOLOGY.

100b. **Embryology of Vertebrates.** The course is designed to lay the foundation of vertebrate embryology. Successive stages in the development of the frog, the chick and the pig are studied from preparations of entire embryos and from serial sections. These observations are used as a basis of comparison for the study of human embryology. (3). First Year. Mr. Lefevre; Mr. Tappreuther.

For comparative anatomy, cytology and other courses in zoology open to medical students as electives, see announcement under College of Arts and Science.

## ELECTIVES.

Courses in botany, psychology, zoology, etc., may be elected by students in the School of Medicine who are prepared to pursue them. See announcement of the College of Arts and Science. With the consent of the Dean, medical students may take any accessory work offered in other departments of the University.

### MEDICAL CERTIFICATE.

On completing the work outlined in the regular medical curriculum, the student is awarded a Medical Certificate at the following commencement. This Certificate will admit him, with full credit for the first two years of medicine, to the leading medical schools, where abundant clinical facilities are available for the last two years' work. Care should be taken, however, to meet the detailed entrance requirements for the particular school chosen.

There is no disadvantage in thus changing to a new place for the clinical work, for there is a natural break in the medical curriculum at this time. Reason and experience agree that the first two years should be devoted exclusively to the fundamental medical sciences. For this work, thoroughly equipped laboratories are necessary. The student is unprepared for clinics, which at this time are apt even to constitute a harmful distraction. At the beginning of the third year, however, the medical student enters upon his clinical work, a new phase of the subject with different teachers, whether in the same or a different school.

### ENTRANCE REQUIREMENTS.

The requirements for admission to the School of Medicine include:

(1) Fifteen units of secondary school work, including at least 3 units of English, 1 of Algebra, 1 of Plane Geometry, 2 of Latin, the remaining being elective. For further details, see general catalogue of the University.

(2) Two years (60 hours credit) of college work, including English, 5 hours; German, 5 hours; General Zoology, 5 hours; General Physics, 5 hours; Inorganic Chemistry, 5 hours; elective, 35 hours. Equivalent work in foreign language may be substituted for the English and German.

### COMBINED WORK IN ARTS AND MEDICINE.

Students who have completed the secondary school work, as above outlined, but not the college work, are advised to enter the College of Arts and Science of the University to secure this work.

By the proper choice of electives in the College of Arts and Science, students may within four years complete the two years' college work required for admission, do the two years' work in Medicine, and at the same time meet the requirements for the degree of Bachelor of Arts. Such students are registered during the first two years in the College of Arts and Science only. During the last two years, however, they must register both in the School

of Medicine and in the College of Arts and Science and must meet the requirements of both. Students are recommended to elect the subjects required, or which lead up to subjects required in Medicine, in approximately the order suggested by the following tabulated statement. The work outlined for the first and second years includes all the college work which is required for entrance to the regular medical curriculum.

The entrance requirement for the combined curriculum outlined below is that specified for the College of Arts and Science, i. e., a high school course equivalent to fifteen units. A student who follows this curriculum will, at the end of four years, have completed the requirements for the A. B. degree. He will also have completed the two years' work in Medicine, and will require only two years more (or six years in all) for the M. D. degree. Students who wish to do more than the required amount of pre-medical collegiate work may extend the time to the amount desired. All students who contemplate taking this work should consult the Committee on Combined Curriculum (at present Professor Jackson).

**CURRICULUM LEADING TO THE DEGREES OF A. B. AND  
M. D. RECOMMENDED BY THE MEDICAL FACULTY.**

	First Semester. Hours credit.	Second Semester. Hours Credit.
<b>FIRST YEAR.</b>		
English (or German).....	5	0
German (or English).....	0	5
General Zoology (1a).....	5	0
Zoology (3a) Mammalian Osteology.....	1	0
Chemistry, Inorganic and Analytical.....	5	5
General Physics (2b) .....	0	6
Physical Training or Military Science.....	0	0
	16	16
<b>SECOND YEAR</b>		
Chemistry, Organic .....	3	3
Embryology of Vertebrates.....	0	3
*History (or Ancient Language).....	5	0
*Ancient Language (or History).....	0	5
*Psychology and Logic.....	5	0
Elective .....	0	5
General Bacteriology .....	3	0
Physical Training or Military Science.....	0	0
	16	16
<b>THIRD YEAR</b>		
(Same as First Year of regular Medical Curriculum)		
<b>FOURTH YEAR.</b>		
(Same as Second Year of regular Medical Curriculum)		

\*Note—When a prescribed minimum amount of High School work in corresponding subjects has been offered for entrance, other subjects may be substituted for those indicated.

**ADVANCED STANDING.**

Every applicant for advanced standing is required to present credentials from an accredited college, and to pass such examinations as may be required to show satisfactory completion of courses equivalent to those for which he seeks credit.

Moreover, the usual entrance requirements to the first year class must be satisfied, and evidence of a good moral character must be presented to the Dean of the School of Medicine.



### Special Students.

Students may be admitted to the School of Medicine without passing the regular examinations required for entrance, under the following conditions: (1) They must be at least 21 years of age; (2) they must show good reason for not taking a regular course; (3) they must pass such examinations or other tests as shall demonstrate fitness to pursue profitably the subjects selected by them. Such students are expected to do specially good work in the subjects which they choose. If at any period of the session the work becomes unsatisfactory, their connection with the University shall be severed by the Dean of the School. They are not considered as candidates for the degree, and cannot be registered as regular students, unless they subsequently fulfill the regular entrance requirements.

### Graduate Work in Medical Sciences.

Special opportunity is given, and every encouragement is offered, to students who desire to do advanced work in any of the fundamental medical sciences. By a year of graduate work, the Master's Degree (A. M.) may be secured, and in three years the degree of Ph. D. Advanced work of the research type in the fundamental medical sciences is highly desirable as a basis for the most thorough work in clinical medicine. It is especially advantageous, however, for those students who desire to specialize with a view to becoming teachers in any of these branches. As previously mentioned, the demand for such teachers far exceeds the supply, and offers an attractive career which many graduates of this school have followed with success. Fellowships and scholarships are available to those who are qualified for graduate work. For further details, see general catalogue or separate announcement of the Graduate School, University of Missouri.

To conduct research work successfully, it is self-evident that the teachers themselves should be active investigators. Such teachers are, moreover, as is proved by experience, those whose interest and enthusiasm for their work is also the source of inspiration for their undergraduate students. From every point of view the encouragement of research work is therefore a matter of highest importance. As substantial evidence of the activity of the Medical School of the University of Missouri along this line, the following list of publications from the various laboratories for the present year may be of interest:

**PUBLICATIONS, 1911-12.****1. From the Department of Anatomy and Histology.**

Bell, E. T., The Interstitial Granules of Striated Muscles and their Relation to Nutrition. *Internationale Monatschrift für Anatomie u. Physiologie*. Bd. 28, 1911.

Jackson, C. M., The Medical College Library. *Proceedings of the Association of American Medical Colleges*, Chicago, 1911.

Jackson, C. M., On the Improvement of Medical Teaching. *Science*, N. S. Vol. 35, 1912.

Jackson, C. M., Growth and Variability in the Body and the Various Organs of the White Rat (ready for publication).

Lowrey, L. G., Prenatal Growth of the Pig. *American Journal of Anatomy*, Vol. 12, 1911.

Lowrey, L. G., On the Water Content of the Tissues of the White Rat (ready for publication).

Heldt, Thomas J., On the Structure of Freshly-fixed Nerve Cells (ready for publication).

Miller, Max M., Prenatal Growth of the Human Spinal Cord (ready for publication).

**2. From the Department of Pathology and Bacteriology.**

Dolley, D. H., The Identity in Dog and Man of the Sequence of Changes Produced by Functional Activity in the Purkinje Cell of the Cerebellum. *Journal of Medical Research*, XXV, 1911.

Dolley, D. H., A Systematization of Certain Morbid Processes as regards their Relation to the Nervous System on the Anatomical Basis of its Functional Activity. *Cleveland Medical Journal*, XI, 1912.

Mitchell, O. W. H., Germicidal and Osmotic Properties of Picric Acid. *Annals of Surgery*, 1911.

Mitchell, O. W. H., Picric Acid as a Skin Disinfectant. In press—to appear in *Annals of Surgery*.

Mitchell, O. W. H., The Importance of the Bacteriological Examination of Water and the Inspection of Water Supplies. *Journal Missouri State Medical Association*, 1912.

Mitchell, O. W. H., *Bacillus Muris* as the Etiological Agent of Pneumonitis in White Rats and its Pathogenicity for Laboratory Animals. *Journal of Infectious Diseases*, 1912.

**3. From the Department of Physiology, Physiological Chemistry and Pharmacology.**

Ewing, E. M., The Effects of Pilocarpine and Atropine upon the Amyolytic Power and Composition of the Saliva. *Journal of Pharmacology and Experimental Therapeutics*, Vol. III, 1911.

Greene, Chas W., The Absorption of Fats by the Alimentary Tract with Special Reference to the Function of the Pyloric Coeca in the King Salmon. Proceedings of the American Fisheries Society, 1912.

Greene, Chas W., A New Type of Fat Storing Muscle in the Salmon. American Journal of Anatomy, Vol. 13, 1912.

Greene, Chas. W., The Absorption of Fat in the Salmon Muscular Tissue and its Resorption During the Migration Fast. Proceedings of the Biochemical Society, The Journal of Biological Chemistry, Vol. XI, 1912. Proceedings of the American Physiological Society, American Journal of Physiology, Vol. XXIX, 1912.

Greene, Chas. W., The Storage of Fat in the King Salmon Muscular Tissue and its Resorption during the Fast of the Spawning Migration. Bulletin U. S. Bureau of Fisheries (in press).

Greene, Chas. W., The Absorption of Fat by the Salmon Stomach. American Journal of Physiology, Vol. XXX, 1912.

Greene, Chas. W. and Skaer, Wm. F., Absorption of Fat by the Mammalian Stomach. Proceedings American Physiological Society, Vol. XXIX, 1912.

Steel, Matthew, On the Absorption of Aluminum from Aluminized Foods. American Journal of Physiology, Vol. XXVIII, 1911.

#### **4. From the Department of Zoology.**

Lefevre, George, and Curtis, W. C., Metamorphosis without Parasitism in the Unionidae. Science, Vol. 33, 1911.

Lefevre, George, and Curtis, W. C., Studies on the Reproduction and Artificial Propagation of Fresh-water Mussels. Bulletin of the Bureau of Fisheries, Vol. 30, 1912.

Lefevre, George, Evolutional Zoology. University of Missouri Bulletin, Science Series, Vol. 1 (in press).

Further evidence of the efficiency of the advanced instruction given in the medical laboratories is furnished by the success of those students who have specialized in the various lines. The following list may be of interest as showing the university positions (instructor or higher rank) filled by recent (since 1900) graduates or former students.

#### **UNIVERSITY POSITIONS FILLED BY RECENT GRADUATES OR FORMER STUDENTS.**

E. T. Bell, Assistant Professor of Anatomy in the University of Missouri; later Assistant Professor of Anatomy and now Assistant Professor of Pathology in the University of Minnesota.

Edward Bonnot, Instructor in Anatomy and Chemistry, St. Louis University.

Clyde Brooks, Instructor in Physiology, Washington University, and now at University of Pittsburgh.

H. H. Bullard, Instructor in Anatomy, Tulane University.

H. W. Coffin, Instructor in Physiology, University of Iowa.

M. W. Dooley, Associate Professor of Physiology, Syracuse University.

O. R. Gullion, Instructor in Pharmacology, Cornell University (now in practice, Eugene, Oregon).

C. C. Guthrie, Instructor in Physiology, Chicago University; later Professor of Physiology and Pharmacology, Washington University, and now in the University of Pittsburgh.

J. B. Hanson, Demonstrator in Pharmacology, University of Iowa.

C. M. Jackson (see Faculty list, University of Missouri, on previous page).

F. P. Johnson (see Faculty list, University of Missouri, on previous page).

A. W. Kampschmidt, Acting Instructor in Physiology, University of Missouri (now in practice, Columbia, Mo.).

Kistler, H. D., Instructor in Anatomy, St. Louis University; (now in practice, Butte, Montana).

Ruskin Lhamon, Instructor in Anatomy, Stanford University; now Assistant Professor of Anatomy, Philippine Medical School.

L. G. Lowrey (see Faculty list, University of Missouri, on previous page).

A. W. McAlester, Jr., Professor of Ophthalmology, University of Kansas.

Caroline McGill, Assistant Professor of Anatomy, University of Missouri; (now Clinical Pathologist, Murray Hospital, Butte, Montana).

O. W. H. Mitchell, (see Faculty list, University of Missouri, on previous page).

Peter Potter, Instructor in Anatomy, University of Missouri; later Associate Professor of Anatomy, St. Louis University; (now in practice, Butte, Montana).

H. W. Stiles, Instructor in Anatomy, University of Michigan; later Assistant Professor of Anatomy, Tulane University; now Professor of Anatomy, Syracuse University.

### Low Cost of Medical Education.

Another advantage is the unusually low cost at which premedical and medical education of the highest type may here be obtained. In order to show what it actually costs, statistics have

been collected from both premedical and medical students of the University of Missouri, showing the total expenses for the school year 1910-11. The average cost per student, also the maximum and minimum, is indicated for each item.

Average Cost for	Premedical (1st and 2nd yrs. of Combined Course)	Medical (3rd and 4th yrs. of Combined Course)
Board	\$106 (\$ 80 to \$148)	\$111 (\$ 78 to \$160)
Room	\$ 47 (\$ 30 to \$ 80)	\$ 45 (\$ 32 to \$ 80)
Tuition and Laboratory Fees	\$ 33 (\$ 20 to \$ 48)	\$ 71 (\$ 60 to \$ 83)
Books and Stationery	\$ 16 (\$ 6 to \$ 30)	\$ 32 (\$ 15 to \$ 50)
Clothing	\$ 48 (\$ 10 to \$150)	\$ 54 (\$ 7 to \$180)
Incidentals	\$ 65 (\$ 12 to \$150)	\$ 69 (\$ 12 to \$153)
Average total	\$315 (\$190 to \$541)	\$382 (\$258 to \$624)

From this table it is evident that the average total cost for the school year (nine months) is about \$315 in the premedical, and \$382 in the medical years. The average is of course higher than necessary, due to those who are able to afford many luxuries. The minimum figures, however, show that by economy, the cost is reduced to about \$200 and \$250 respectively. Thus the total cost for the four years is less than that for two years of medicine alone in many of the prominent schools.

### Opportunity for Self-Support.

In the case of students working their way through (about half of the class) the net cost is even reduced considerably lower. The average amount earned by self-supporting students during the school year in the premedical classes was \$132 (\$25 to \$204) and in the medical classes was \$154 (\$11 to \$337). It is therefore evident that by earning at least \$100 more during the summer vacation it is possible for the average student to pay his entire way through the premedical and medical years. This is actually accomplished by a considerable number of students. Students who desire work should apply to the Employment Bureau of the Y. M. C. A., University of Missouri. As a rule, every student should have at least



\$100 ahead at the start, and those who come before school opens have the best chance for employment. Board and room may be obtained in the University dormitories and dining club for about \$3 a week, but applications must be filed early, as the space is limited.

### **Rollins Scholarship.**

The Rollins Scholarship in the School of Medicine is a prize of fifty dollars (\$50.00), which is awarded by vote of the Medical faculty to that member of the first year class (third year of combined curriculum) who has made the best record during the course.

### **Medical Society.**

For many years the medical students have regularly conducted a medical society which has been very successful. At the meetings (at present monthly) the program consists of papers by students, supplemented by talks from faculty members or other visiting guests. Premedical students are also eligible to membership.

### **Register of Students.**

At Commencement in June, 1911, the Medical Certificate was awarded to ten students. During the session 1911-12 there were enrolled fifteen in the First Year class, twenty-one in the Second Year class, and eleven Special students in the Training School for Nurses, a total of forty-seven. The names of these students are published in the general Catalogue of the University.

### **High Standing of the School of Medicine.**

The School of Medicine of the University is rated in class A by the Council on Medical Education of the American Medical Association. It is also a member of the Association of American Medical Colleges. In the report of the Carnegie Foundation previously referred to, the facilities of the Medical School of the University of Missouri are summarized (p. 251) as follows: "The medical department occupies a new and well equipped building, excellently adapted to its purposes. The teaching is in charge of full-time instructors of modern training and ideals. A university hospital of 45 beds gives the department the advantage of clinical material and connection, even though the actual instruction is limited to the work of the first two years, a feature of great importance. There is a library supplied with important current periodicals, domestic and foreign."

# UNIVERSITY CALENDAR.

at Columbia.

## Summer Session.

1912.

June 14,	Friday, Registration, Summer Session.
June 15,	Saturday, Organization of Classes.
July 4,	Thursday, Holiday.
August 14,	Wednesday, Lectures Close.
August 15,	Thursday
August 16,	Friday
	} Examinations.

## First Semester.

September 16, 17, 18,	Monday, Tuesday and Wednesday, Entrance Examinations and Registration.
September 19,	Thursday, at 8 A. M. Class Work in all Divisions Begins.
September 19,	Thursday, at 10 A. M. Opening Convocation.
November 28,	Thursday, Thanksgiving Holiday.
December 10,	Tuesday, Annual Meeting of Curators.
December 20,	Friday, at 4 P. M. to
1913.	} Christmas Holidays.
January 6,	Monday, at 8 A. M.
February 1,	Saturday, to
February 8,	Saturday
	} Mid-Year Examinations.

## Second Semester.

February 10, 11,	Monday and Tuesday, Registration, Second Semester.
February 12,	Wednesday, at 8 A. M. Class Work in all Divisions Begins.
February 13,	Thursday, at 10 A. M. Opening Convocation.
March 20,	Thursday, at 4 P. M. to
March 26,	Wednesday, at 8 A. M.
April 3,	Thursday, Quarterly Meeting of Curators.
May 31,	Saturday to
June 7,	Saturday
June 8,	Sunday, Baccalaureate Sermon.
June 9,	Monday, Class Day.
June 9, 10, 11,	Monday, Tuesday, and Wednesday, Entrance Examinations.
June 10,	Tuesday, Phi Beta Kappa Day.
June 11,	Wednesday, Commencement Day.
June 11,	Wednesday, Semi-Annual Meeting of Curators.

## THE UNIVERSITY OF MISSOURI.

The University of Missouri stands at the head of the educational system of the State. It is one of the oldest institutions in the West and ranks among the best American schools of higher education.

The University was founded at Columbia in 1839 and instruction in academic work was begun in 1841. Few schools in the United States have made the advancement that Missouri has during the past fifteen years. In 1897 the enrollment was only 805 and in 1912 it was more than 3,000. The increased enrollment is but indicative of the development of the school in educational efficiency.

The work of the University is now carried on in the following Schools and Colleges:

- College of Arts and Science
- College of Agriculture
- School of Education
- School of Law
- School of Journalism
- School of Medicine
- School of Engineering
- School of Mines and Metallurgy
- Graduate School

All of these divisions are at Columbia with the exception of the School of Mines and Metallurgy, which is located at Rolla. In addition emphasis is given particular lines of work by the establishment of minor divisions, the chief of which are the Extension Division, the Agricultural Experiment Station, the Engineering Experiment Station, and the Military Department.

The fundamental aim of the University is the development of the highest and most efficient type of citizen. The school is supported by the State and endeavors to return to the State practical service. Of later years the University has endeavored to go beyond the campus in its influence on the welfare of the people of Missouri. Extension courses, experiment farms, and free literature on practical subjects are some of the methods adopted. Recently the School of Journalism has been issuing free bulletins on subjects of vital interest to the country newspapers, which are expected to fill much the same field that agricultural bulletins have so successfully filled for the farmer. The various extension courses have proven highly satisfactory and have rendered real service to people of the State who previously benefited only indirectly from the University.

The University is located at Columbia, a town situated half way between St. Louis and Kansas City near the center of the state. It is reached by the Wabash, and Missouri, Kansas & Texas Railways. Columbia is a progressive and prosperous town having doubled its population in the last few years. It has nearly twenty miles of paved streets.

The University grounds cover over seven hundred acres. The main divisions are in the Quadrangle, the Horticultural Grounds, the Physical Education Grounds, and the Agricultural College Farm.

The following University buildings are located at Columbia: Academic Hall; Laws Observatory; separate buildings for Chemistry; Zoology and Geology; Law; Engineering; Manual Arts; three power houses; Medical Laboratory Building; Parker Memorial Hospital including the Busch Clinic; Agricultural Building; Horticultural Building; Green Houses; Live-Stock Judging, Dairy, Farm Machinery, and Veterinary Buildings, and the Agricultural Farm Barns and Buildings; Switzler Hall, for the School of Journalism; Benton and Lathrop Halls, dormitories for men; Read Hall, the dormitory for women; Rothwell gymnasium; the houses for the President of the University and the Dean of the College of Agriculture; the High School, and the Elementary School Buildings used for practice schools in the School of Education.

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Full information regarding the University is given in the catalogue which will be sent on request without charge. For this or special bulletins of the Graduate School, College of Arts and Science, College of Agriculture, School of Education, School of Law, School of Medicine, School of Engineering, and the School of Journalism, write to

DEAN OF THE UNIVERSITY FACULTY,

University of Missouri,

Columbia, Missouri.









THE  
UNIVERSITY OF MISSOURI  
BULLETIN

GENERAL SERIES

FOR 1912 VOLUME 13

EDITED BY

JOSEPH E. CHASNOFF

*University Publisher*

- Number 1, January ..... Summer Session  
Number 2, February ..... "Every Day at the University"  
(A Glimpse of Student Activities with Views of the Buildings.)  
Number 3, March ..... Graduate School  
Number 4, April ..... Catalogue  
Number 5, May ..... School of Education  
Number 6, June ..... School of Medicine  
Number 7, July ..... School of Law  
Number 8, August ..... School of Journalism  
Number 9, September ..... School of Engineering  
Number 10, October ..... College of Agriculture  
(Regular Session)  
Number 11, November ..... College of Agriculture  
(Short Course)  
Number 12, December ..... Second Semester Courses

Published by

UNIVERSITY OF MISSOURI  
Columbia, Missouri

Issued Monthly



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1914/15

# THE UNIVERSITY OF MISSOURI BULLETIN

VOLUME 15

NUMBER 16

GENERAL SERIES

1914, No. 6

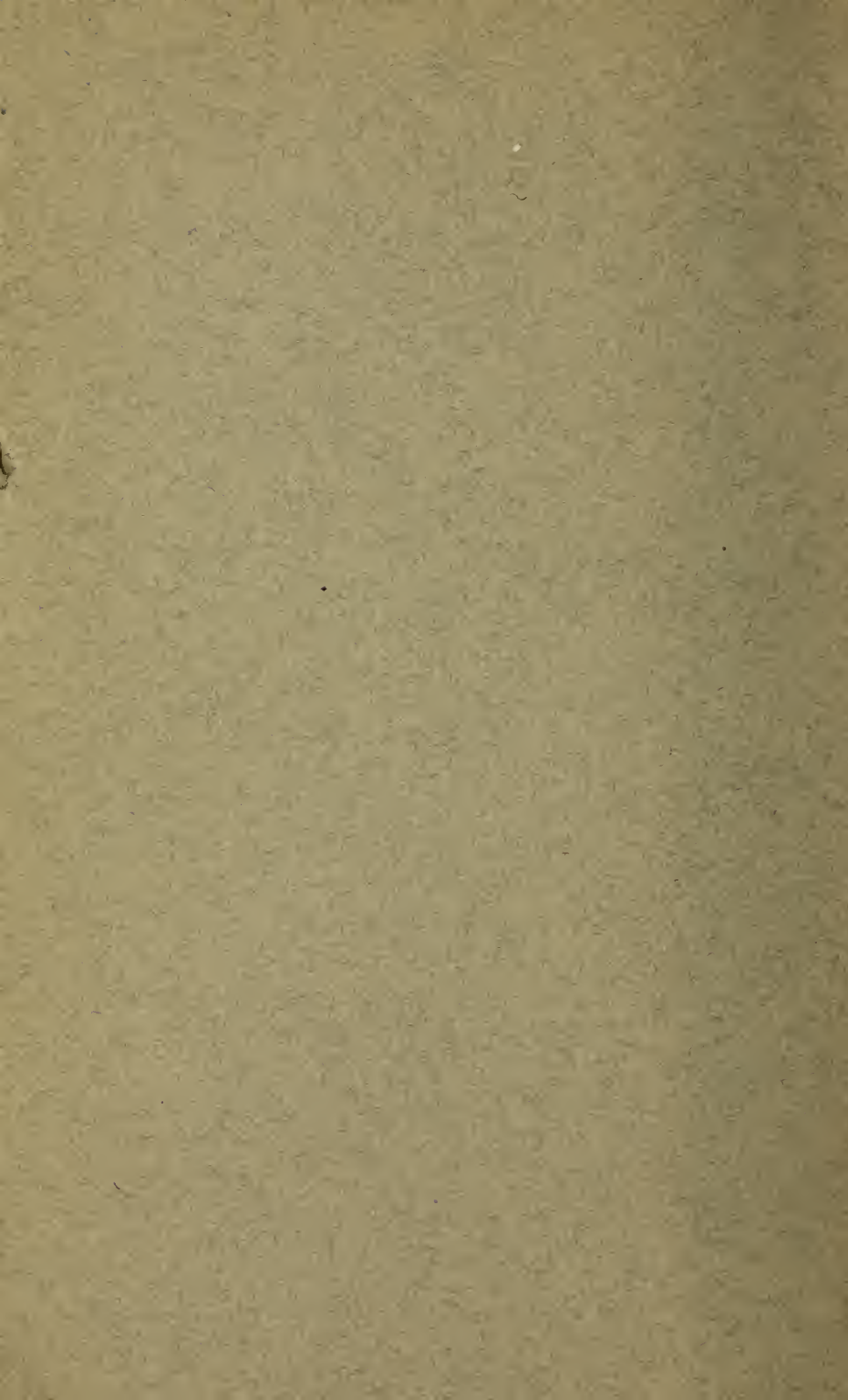
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ANNOUNCEMENT  
OF THE  
SCHOOL OF MEDICINE  
1914-15



UNIVERSITY OF MISSOURI  
COLUMBIA, MISSOURI  
June, 1914





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June, 1914

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## THE PROFESSION OF MEDICINE

The following pages will be devoted to a brief consideration of certain questions of interest to all who expect to follow the profession of medicine. It is important that all prospective medical students should know the present status of medicine, its advantages and disadvantages as a profession, the opportunities which it offers and the qualifications necessary for success. It is especially important that the general principles underlying sound medical education be clearly understood and that data be made available which will enable those interested to judge of the relative merits of the numerous medical schools in this country.

### Advantages and Disadvantages of Medicine as a Profession

Some of the more obvious disadvantages of medicine as a profession may first be mentioned. Among these are the irregularity of the work, the exposure and danger, the severity of physical and mental strain, and the relatively poor remuneration in comparison with the necessary skill and education. It should be clearly understood that competition is severe, for the medical profession (like most others) is overcrowded. Moreover, with the increase of popular knowledge regarding hygiene and preventive medicine, the need for medical service is in some respects diminishing.

As an offset to the foregoing, however, the medical profession has numerous advantages to offer to those properly qualified. In the first place, for those who achieve eminence by reason of unusual ability and thorough training, the financial rewards are great. Every really well-qualified practitioner is reasonably sure of a good income.

Money, however, is by no means the chief attraction which the profession of medicine has to offer. There is a fascination about the work which is difficult to explain, but which is nevertheless characteristic. Successful practitioners enjoy their work, in spite of hardships and difficulties. Moreover, even in this materialistic age, the philanthropic aspect of the practice of medicine appeals strongly to many. From this point of view, no profession offers greater opportunity for public and private service.

Another phase of medical work, which to many is more attractive than the ordinary practice, is that of teaching and investigation in the various medical sciences. There is at present a strong demand, which is likely to continue, for well-trained men who will devote themselves to anatomy, physiology, pathology, etc. While

not so remunerative as the practice of medicine, positions in these and similar branches offer good salaries and an attractive career to those whose tastes and talents incline toward teaching and research.

Finally, so far as competition is concerned, there is no question that the medical profession is overcrowded, but it is *overcrowded with incompetents*. It is true that our leading physicians rank among the best in the world. But on the other hand, owing to the low standards of medical education which have prevailed during the past, it must be confessed that the rank and file of medical practitioners average very low in efficiency. Nowhere is it more emphatically true that "there's plenty of room at the top." No man of reasonable ability with thorough collegiate and professional training need fear the competition. And as the general public is learning to discriminate more carefully, the demand for well-qualified physicians grows stronger. It is therefore exceedingly important for the prospective medical student to consider carefully the qualifications necessary for success in this profession, in order that he may prepare himself accordingly.

### Premedical Education

For success in any applied science, two things are necessary: first, to master your science; and second, to learn how to apply it. To master the difficult science of modern medicine, it is absolutely necessary to have a thorough preliminary scientific training.

The amount and character of the necessary preliminary training for medicine is a theme which has been much discussed in recent years. While there are still different views concerning details, there is with reference to the essential points a general consensus of opinion among those entitled to speak with authority in this matter. The first point which should be emphasized is that a *high-school education alone is insufficient*, especially in science, to prepare a student for the difficult medical curriculum of today. The necessity for collegiate work preliminary to medicine is so important and so clearly recognized that it is now required by law in ten states, including Minnesota, Iowa, North and South Dakota, Kansas, Indiana, Connecticut, Colorado, Utah and Vermont.

In these states, in order to be admitted to examination for license to practice, one must show that he took at least one or two years of collegiate work, in addition to the equivalent of a four years' high school course, before entering a medical school. Before the time when those now entering medicine will be graduated, this legal requirement will doubtless be established in many other states. Students should therefore beware of entering medicine without preliminary collegiate work.



While it is generally recognized that at least one or two years of preliminary collegiate work are necessary, few will urge, as a general requirement, the completion of four years of college work before entering medicine. Indeed it is probable that as a general rule this is an unnecessary expense of time and money, and postpones unduly the age at which practice begins.

Taking all things into consideration, it is the consensus of opinion that the requirement of two years of collegiate work for entrance best meets present conditions. This, it may be noted, is approximately equivalent to the entrance requirement for medicine in the leading European nations. An admirable solution of the problem of preliminary medical education is found in the "combined curriculum" in arts and medicine, whereby it is possible to secure the A. B. degree and also the M. D. within six years.

As to the character of the collegiate work preparatory to medicine, there is now a general agreement of opinion. The old idea that there exists an ideal collegiate course, classical or otherwise, which prepares for any vocation is now abandoned. The present elective system makes it desirable for one to decide upon his future career as early as possible, and to plan his college course so as to prepare himself for the greatest possible efficiency in his life work.

What subjects, then, should the premedical college course include? First and foremost, it should be so planned as to give a thorough training in biology, especially zoology. Most of the accurate and useful knowledge we have concerning the laws of life is derived from careful study and experimentation upon lower forms of life.

In order to understand the nature and conditions of life, it is therefore further evident that one must have a thorough knowledge of physics and chemistry. As time goes on, biology in general and medicine in particular are based more and more upon the fundamental laws of physics and chemistry. Having laid a good foundation in physics, chemistry and zoology, the student is prepared for the more specialized biological sciences, anatomy, physiology and pathology; and these in turn lead up to the technical courses in clinical medicine.

Other sciences valuable for the medical student are botany and experimental psychology. Of mathematics, enough should be taken to facilitate the work in physics and chemistry. In languages, excepting an elementary knowledge of Latin (usually taken in the high school), French and German are most valuable. This is especially true of German, since a large proportion of the most important biological and medical work is published in that language.

The advantages of a premedical scientific college course as outlined above are well summarized by the following quotation (from

the Journal of the American Medical Association, May 27, 1911): "As a part of the education which should be preliminary to the study of medicine, courses in physics, chemistry, biology, and modern languages have been especially urged during the last several years by the Council on Medical Education. The importance of the sciences named does not depend so much on the bare knowledge obtained from them as on training the student receives. In the work in these sciences, and particularly in the laboratory work, the student, under able instructors, acquires the ability to think for himself; he develops the scientific spirit; he learns the use of the microscope and becomes acquainted with the methods and value of experimentation. A reading knowledge of French and German is an invaluable aid to the medical knowledge, a large portion of which appears in the languages named. That is the minimum preliminary education which should be insisted upon in this country, not because it is the minimum requirement in every other civilized nation, which is a fact, but because the student really needs that training in order to master the complex courses in the modern medical curriculum and to do his part in solving the intricate problems which now confront the medical world. In the medical course of today the ability of the student to think, to observe and to do research work is very essential. Experience has shown that the needed qualifications are best developed by thorough courses, under expert teachers, in physics, chemistry, biology and modern languages. These are the reasons for urging those courses as a part of the minimum requirement for admission to the medical schools in this country."

### Medical Education

Presupposing the preliminary college training as above outlined, the medical education proper may next be considered. What are the subjects included in the medical curriculum, and what facilities are necessary in order that they may be successfully taught? As previously stated, medicine is an applied science. Broadly speaking, therefore, it is necessary first to master the subject matter, the fundamental medical sciences, and then to learn how to apply these in clinical medicine, in the prevention and cure of disease. Medical education therefore falls naturally into two subdivisions, the fundamental work occupying the first two years, and the clinical work the last two (or three, if a hospital year be added). Each of these periods will be considered briefly, following which some data will be cited whereby the relative merits of the various medical schools may be judged.

### Fundamental Medical Education

The fundamental sciences upon which medicine is directly based may be grouped under three headings. The first of these, the anatomical group, includes those which concern primarily the normal form and structure of the human body. These include gross anatomy (dissection, osteology, neurology, topographic anatomy, etc.), microscopic anatomy (histology) and developmental anatomy (embryology). The second, or physiological group, includes those studies which concern primarily the normal functions of the living organism. In this group, in addition to physiology in the narrower sense, we may place organic and physiological chemistry, and also pharmacology, which deals with the effects of drugs upon the normal organism. The third group, known as pathology (including bacteriology) deals with the abnormal conditions of structure and function which are associated with disease. Finally, there is the subject of hygiene and preventive medicine, which lies in the borderland between the fundamental sciences previously mentioned, and the succeeding subjects in clinical medicine.

It is impossible within the limits of this bulletin to discuss in detail the requisites necessary for thorough instruction in the fundamental sciences. Those desiring to look into this matter more fully are referred to a work entitled "A Model Medical Curriculum," a report of a committee of one hundred leading educators, issued by the Council on Medical Education of the American Medical Association, 535 Dearborn Ave., Chicago, Ill.

It may be noted briefly that the old-fashioned didactic method of teaching by lectures and recitations from books has been completely revolutionized and replaced by the laboratory method, whereby the student directly observes and studies the phenomena for himself. The laboratory method of instruction requires for success two essential factors. First and most important, the teachers in the various laboratory subjects must be thoroughly trained specialists, who are paid salaries to devote their entire time to this work, and are not allowed to practice medicine. They should moreover be active investigators whose enthusiasm will be an inspiration to their students. The second factor includes the facilities, buildings, equipment and materials for thorough work in each of the laboratories for the various fundamental medical sciences. These two factors, the full-time, thoroughly trained teachers and the numerous well-equipped laboratories are so costly as to be out of the reach of most medical schools, but they are necessary in order to obtain the thorough laboratory instruction which is essential in modern medical education.

Another necessity, the importance of which is becoming more clearly recognized, is a good medical library. This should include several thousand well chosen volumes for reference, including files of one hundred or more of the leading medical periodicals of the world. A good medical library is also very expensive, but is necessary for the best work in instruction, and absolutely essential for research.

### Clinical Medical Education

When the student has completed the first two years of the curriculum and has mastered the fundamental medical sciences, he is familiar with the structure and functions of the human body, both normal and abnormal, and is ready to learn how to apply these principles at the bedside for the alleviation and cure of disease. This final period of medical education is designated clinical medicine. It includes two broad groups, internal medicine and surgery, each with numerous subdivisions. Here also lack of space prevents a discussion of each of the numerous special branches, for a full consideration of which the reader may consult the work "A Model Medical Curriculum" previously referred to. In passing, however, it may be remarked that for successful clinical teaching the essentials are very similar to those already stated for the laboratory sciences. The teachers should be skilled and experienced, each a recognized authority in his particular line. Here also it is highly desirable that salaries should be paid so that the teacher's whole time may be devoted to instruction and investigation, though very few schools are financially able to carry out this policy. The laboratory of the clinical work is the hospital, and it is essential for successful clinical work that each school should own or absolutely control the clinical facilities in a large hospital with a sufficient number of beds in each of the various clinical branches. Certain clinical laboratories must also be provided.

On account of the heavy expenses involved in providing salaried teachers, laboratory and hospital facilities, it is axiomatic that no school can depend solely upon students' fees for support. Private endowment or state support on a liberal scale is essential to provide medical education fully up to modern standards.

The minimum facilities considered absolutely necessary in order that a medical college may be able to give a satisfactory training up to modern standards in both fundamental and clinical subjects are, according to the Council on Medical Education of the American Medical Association, as follows:



### Outline of the Essentials of An Acceptable Medical College

1. Strict enforcement of all standards and requirements, the college itself to be held responsible for any instances where they are not enforced.

2. A requirement for admission of at least a four-year high school education superimposed on eight years of grammar school work, as defined by the College Entrance Examination Board.

3. Beginning January 1, 1914, the minimum requirement for admission should be enlarged to include at least one year's college work each in physics, chemistry, and biology and a reading knowledge of at least one modern language, preferably German or French.

4. A requirement that students be in actual attendance in the college within the first week of each annual session and thereafter.

5. That actual attendance at classes be insisted on except for good cause, such as for sickness, and that no credit be given under any circumstances for less than 80 per cent of attendance on each course.

6. That advanced standing be granted only to students of other acceptable colleges and that in granting advanced standing there shall be no discrimination against the college's full-course students.

7. Careful and intelligent supervision of the entire school by a dean or other executive officer who holds, and has sufficient authority to carry out, fair ideals of medical education as interpreted by modern demands.

8. A good system of records showing conveniently the credentials, attendance, grades and accounts of the students.

9. A fully graded course covering four years of at least 32 weeks each, exclusive of holidays, and at least 30 hours per week of actual work; this course should be clearly set forth in a carefully prepared and printed schedule of lectures and classes.

10. Two years of work consisting largely of laboratory work in thoroughly equipped laboratories in anatomy, histology, embryology, physiology, chemistry (inorganic, organic and physiologic), bacteriology, pathology, pharmacology, therapeutics and clinical diagnosis.

11. Two years of clinical work largely in hospitals and dispensaries, with thorough courses in internal medicine (including physical diagnosis, pediatrics, nervous and mental diseases), surgery (including surgical anatomy and operative surgery on the cadaver), obstetrics, gynecology, laryngology, rhinology, ophthalmology, otology, dermatology, hygiene, and medical jurisprudence.

12. As soon as conditions warrant, a fifth undergraduate year should be required which should be spent by the student as an interne in an approved hospital.

13. At least six expert, thoroughly trained professors in the laboratory branches, salaried so that they may devote their entire



time to instruction and to that research without which they cannot well keep up with the rapid progress being made in their subjects. These professors should have a definite responsibility in the conduct of the college, and their first and chief interest should be in the training of the medical students. There should also be a sufficient number of assistants in each department to look after the less important details. A suggested assignment of these instructors is (a) professor of anatomy, (b) professor of physiology, (c) professor of pathology and bacteriology, and (d) professor of physiologic chemistry and pharmacology. The other two might be associate or assistant professors and assigned one to the laboratory course in histology and embryology under the professor of anatomy and the other to the department of pathology and bacteriology.

14. The medical teaching should be of at least the same degree of excellence as obtains in our recognized liberal art colleges and technical schools.

15. The faculty should be thoroughly organized and, with a few allowable exceptions, should be made up of graduates of institutions recognized as medical colleges and should have had a training in all departments of medicine. They should be appointed because of their ability as teachers and not because they happen to be on the attending staff of some hospital or for other like reasons.

16. The college should own or entirely control a hospital in order that students may come into close and extended contact with patients under the supervision of the attending staff. The hospital should have a sufficiently large number of patients to permit the student to see and study the common variety of surgical and medical cases as well as a fair number in each of the so-called specialties.

17. The college should have easily accessible hospital facilities of not less than 200 patients which can be utilized for clinical teaching (for senior classes of 100 students or less), these patients to represent in fair proportion all departments of medicine.

18. The college should have additional hospital facilities for children's diseases, contagious diseases, and nervous and mental diseases.

19. Facilities for at least six maternity cases for each senior student, who should have actual charge of these cases under the supervision of the attending physician. Careful records of each case should be handed in by the student.

20. Facilities for at least 30 autopsies during each college session which are attended and can be participated in by senior students (for senior classes of 100 students or less).

21. A dispensary, or out-patient department, under the control of the college, the attendance to be a daily average of 60 cases (for senior classes of 100 students or less), the patients to be carefully

classified, good histories and records of the patients to be kept and the material to be well used.

22. The college should have a working medical library to include the more modern text and reference books with the *Index Medicus* and 30 or more leading medical periodicals; the library room should be properly lighted and heated, and easily accessible to students during all or the greater part of the day; it should be equipped with suitable tables and chairs, and have a librarian in charge.

23. A working medical museum having its various anatomic, embryologic, pathologic and other specimens carefully prepared, labeled and indexed so that any specimen may be easily found and employed for teaching purposes. It is suggested that so far as possible with each pathologic specimen coming from post-mortems there also be kept the record of the post-mortem, the clinical history of the patient on whom the autopsy was held and microscopic slides showing the minute structures of the disease shown in the gross specimen.

24. There should be sufficient dissecting material to enable each student individually to dissect at least the lateral half of the human cadaver; to provide cross-sections and other demonstration material and to allow of a thorough course for each senior in operative surgery on the cadaver.

25. A supply of such useful auxiliary apparatus as a stereopticon, a reflectoscope, carefully prepared charts, embryologic or other models, manikins, dummies for use in bandaging, a Roentgen-ray, and other apparatus now so generally used in medical teaching.

26. The college should show evidences of thorough organization and of reasonably modern methods in all departments and evidences that the equipment and facilities are being intelligently used in the training of medical students.

27. A clear statement of the college's requirements for admission, tuition, time of attendance on the classes, sessions, courses offered and graduation should be clearly set forth, together with complete classified lists of its matriculants and latest graduating class in regular annual catalogues or announcements.

### Criteria for Judging Schools

Having in mind the essential elements involved in a thorough premedical and medical education, it devolves upon the prospective student to select the school which he will attend. This is a critical problem, and grave mistakes are often made through lack of knowledge regarding the various schools. With regard to the premedical college work, the problem is less difficult, but it is essential to choose

a college well equipped for teaching the fundamental sciences of biology, physics and chemistry. In general, these are best taught in the stronger universities, such as those in the Association of American Universities.\*

In choosing a school for the medical curriculum proper, the problem is much more complicated. There are in the United States about 120 medical colleges, good, bad and indifferent, whose relative merits it is difficult for the student to judge. Bearing in mind the essential principles previously outlined, the most important information desirable is indicated in the following questions:

1. As to organization, is it an independent medical school, or an integral (not merely nominal) department of a strong university?

2. What is the amount of the income and expenditure? Is the income dependent solely upon students' fees, or is it supported liberally by endowment or state appropriations?

3. What is the extent and character of the laboratory and clinical facilities, its buildings, equipment, library?

4. What is the character of the faculty? Are the teachers full-time salaried experts, or are they allowed to engage in the private practice of medicine? To what extent are they contributing to the advancement of medical science by original research?

5. Do the entrance requirements include a minimum of two years of college work, and are they strictly enforced?

6. What is the character of the curriculum, stress laid upon practical work in laboratory and clinics, opportunity for research, etc.?

7. Are the classes large, or are they small, allowing individual attention to each student?

8. What are the tuition fees and expenses?

9. What is the general standing of the school, its rating by competent and disinterested organizations, and its efficiency as measured by the results of the examination of its graduates before the various state licensing boards?

### Where to Find Information

Where can the prospective student find reliable data in answer to the preceding questions? Much can of course be learned from the catalogues of the various schools, but in many cases it must be

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\* This association includes the following universities: California, Catholic University, Chicago, Clark, Columbia, Cornell, Harvard, Illinois, Indiana, Iowa, Johns Hopkins, Kansas, Michigan, Minnesota, Missouri, Nebraska, Stanford, Pennsylvania, Princeton, Virginia, Wisconsin and Yale.

confessed that the information contained therein is incomplete, and even misleading. It may therefore be of service to those interested in this matter to know where to find reliable data from disinterested sources.

In the first place, a list of the medical schools of the United States together with brief information (furnished, however, by the schools themselves) is published in the chapter on "Professional Schools" in the annual report of the Commissioner of Education, U. S. Bureau of Education, Department of the Interior, Washington, D. C. A reprint of this chapter is obtainable and is useful for reference.

Similar information, which is more complete in some respects, is published each year during August in the "Educational Number" of the Journal of the American Medical Association (Chicago).

The Council on Medical Education of the A. M. A. has made a thorough personal inspection and investigation of the various medical schools of the country, and has rated them in four classes: Class "A plus" colleges are those which are acceptable (24 colleges); class "A," those which need improvement in certain respects, but which are otherwise acceptable (42 colleges); class "B," those which, under their present organization, might be made acceptable by general improvements (24 colleges); and class "C," those which require a complete reorganization to make them acceptable (29 colleges).

Another basis for judgment is to be found in the membership of the Association of American Medical Colleges, with about 50 schools, including nearly all of the better class. A list of the members is published annually in the Educational Number of the Journal A. M. A. above referred to, or may be obtained from the Secretary, Dr. F. C. Zapffe, 3431 Lexington St., Chicago, Ill.

## THE SCHOOL OF MEDICINE

In the foregoing pages the profession of medicine has been considered with especial reference to the principles underlying sound medical education, and the facilities necessary according to modern standards. Attention is now called to the School of Medicine of the University of Missouri, and to the advantages which it offers in providing facilities for obtaining at low cost both premedical and medical education measuring up to the high standards previously outlined.

### Aim of the School of Medicine

The aim of the School of Medicine is threefold:

(1) To give a thorough laboratory training in those scientific subjects which are fundamental to medicine and form an indispensable preparation for the clinical work.



(2) To contribute to the advancement of medicine by original investigation in the various sciences upon which modern medicine is based.

(3) To promote the diffusion of medical knowledge among the citizens of the state.

### HISTORICAL STATEMENT

The Medical Department of Kemper College ("McDowell Medical College"), founded in St. Louis in 1840, was the first medical school established west of the Mississippi River. In 1845 this school became the Medical Department of the University of Missouri. In 1855, however, it was discontinued; but was re-established in Columbia in December, 1872. The curriculum was at first only two years in length, but was extended to three years in 1891, and to the full four years in 1899.

Owing to the limited clinical facilities available at present, the last two (clinical) years of the medical curriculum have been temporarily suspended. A plan for the establishment of a general state hospital has been adopted by the University, and the clinical portion of the work will be resumed as soon as it is practicable to establish it with adequate clinical facilities. In the meantime, the first two years of the medical curriculum will be continued at Columbia and still further strengthened.

The School of Medicine has always stood for the highest standards of medical education, and was a pioneer in introducing and developing the laboratory method. Laboratory work in anatomy, chemistry, and microscopy was required of students from the date of reestablishment in 1872. A few years later laboratory work in pathology and in physiology was added, and in 1891 the laboratories of histology and bacteriology were established. The School of Medicine of the University of Missouri was also one of the first schools to place these fundamental medical sciences in charge of specialists who are not allowed to practice medicine, but devote their time exclusively to teaching and investigation.

### Organization and Support

As has been previously emphasized, the nature of the organization and support of a medical school is a matter of primary importance. The medical school of the University of Missouri is an integral part of the University, whose total income from all sources is about \$1,125,000 a year. The medical school is supported from this income, about \$50,000 being expended annually for this purpose (including hospital), while less than \$3,000 is collected in fees from the medical students.



As a result of this liberal support, it has been possible for many years to organize and maintain the medical work on a proper University basis. The course of study is carefully planned, modern laboratory methods being used throughout. The high standards of admission result in small classes (not more than twenty-five in each), prepared for the highest type of work. Women are admitted on equal terms with men.

In the following pages, more detailed information will be given concerning the faculty, the buildings and equipment, and the courses of study.

## FACULTY OF THE SCHOOL OF MEDICINE

- ALBERT ROSS HILL, A. B., Ph. D., LL. D.,  
President of the University.
- GUY LINCOLN NOYES, M. D.,  
Professor in the Department of Clinical Medicine and Surgery,  
Superintendent of Parker Memorial Hospital, Acting Dean of  
the Faculty.
- SIDNEY CALVERT, B. S., A. M.,  
Professor of Organic Chemistry.
- ELIOT ROUND CLARK, A. B., M. D.,  
Professor of Anatomy.
- DAVID HOUGH DOLLEY, A. B., A. M., M. D.,  
Professor of Pathology.
- CHARLES WILSON GREENE, A. B., A. M., Ph. D.,  
Professor of Physiology.
- GEORGE LEFEVRE, A. B., Ph. D.,  
Professor of Zoology.
- WOODSON MOSS, M. D., LL. D.,  
Professor in the Department of Clinical Medicine and Surgery.
- MAX WASHINGTON MYER, A. B., M. D.,  
Professor in the Department of Clinical Medicine and Surgery.
- MAZYCK PORCHER RAVENEL, A. B., M. D.,  
Professor of Medical Bacteriology and Preventive Medicine, Direc-  
tor of the Public Health Laboratory.
- FRANKLIN PARADISE JOHNSON, A. B., A. M., Ph. D.,  
Associate Professor of Anatomy.
- ADDISON GULICK, A. B., A. M., Ph. D.,  
Assistant Professor of Physiology.
- MARTIN DUPRAY, A. B., A. M.,  
Instructor in Bacteriology and Preventive Medicine.
- THEOPHILE KARL THEODORE KRUSE, A. B., A. M.,  
Instructor in Physiology.
- FLOYD AUGUST MARTIN, A. B., A. M., M. D.,  
Instructor in Pathology.
- GEORGE WASHINGTON TANNREUTHER, A. B., A. M., Ph. D.,  
Instructor in Zoology.
- EVERETTE ERWIN BUTLER, A. B.,  
Assistant in Pathology.
- JOHN MEYNARD CARTER, A. B.,  
Assistant in Physiology.
- THOMAS FOSTER WHEELDON, A. B.,  
Assistant in Anatomy.

## BUILDINGS AND EQUIPMENT

Next to the faculty, among the factors which determine the efficiency, come the buildings and material equipment. The School of Medicine is located upon the same campus with other divisions of the University. Of the various buildings on the campus, a group of three—the Medical Laboratory Building, the Parker Memorial Hospital and the animal house—are devoted primarily to the School of Medicine. These will be described in some detail. Several other buildings are also utilized in part for medical instruction.

### Medical Laboratory Building

The Medical Laboratory Building is a stone and brick building, 48x150 feet, three stories high. It was especially designed for the medical laboratories, and is well equipped to meet the needs of modern laboratory instruction and research. The following is a brief list of the various rooms and equipment in this building.

The department of anatomy and histology occupies a large dissecting room, well lighted and ventilated, with dissecting tables, students' lockers, display cases for specimens, models; an advanced anatomical laboratory, specially equipped for the study of topographic anatomy, including serial sections through formalin hardened bodies; histological laboratory, with preparation and store-room in connection, thoroughly equipped with lockers, tables, microscopes, microtomes, and other apparatus for instruction and research in microscopic work; lecture room for anatomy and histology, equipped with Auzoux manikin, projection apparatus, charts; museum and study room; with adjacent preparation room, containing a large number of models and specimens in human anatomy; research laboratory; embalming and storage rooms, with an abundance of well-preserved cadavers for the work in dissection.

The department of physiology, physiological chemistry, and pharmacology occupies the following rooms: A large laboratory with adjoining store-room, equipped with tables, lockers, and sets of apparatus for the students in physiology and pharmacology; a blood-pressure room, particularly for mammalian experiments; a research laboratory, thoroughly equipped, for advanced students in physiology and pharmacology; research laboratory in physiological chemistry; large students' laboratory with adjacent store-room, thoroughly equipped for work in physiological chemistry; animal room; mechanic's shop; lecture room (in common with pathology).

The department of pathology and bacteriology, occupies a large students' laboratory for bacteriology and pathological histology, well equipped with lockers, microscopes with oil immersion lenses; a preparation room for bacteriology, with sterilizers, incubators; private

laboratory, well equipped for research work in pathology; room for autopsies and work in gross pathology, including a collection of pathological specimens in glass cases; an animal room and store-room; office and research laboratory for bacteriology; lecture room (in common with physiology); laboratory room for work of preventive medicine.

### Medical Library

No medical school of today can be considered well equipped without a good library. The medical library is placed in a room on the upper floor of the Medical Laboratory Building, and is open eight hours daily, except Sunday. It contains 5,752 bound volumes, and a large number of pamphlets. The principal medical works of reference are included and 100 leading medical periodicals of the world are received regularly and placed on file. Complete sets of most of these journals are available. The main University Library also contains many works of interest and value to the medical sciences.

A complete catalogue of the books and periodicals in the medical library will be furnished free by the University Librarian upon request. The journals and books in the library will be lent free to any reputable physician of the state. The borrower is required to pay the transportation charges both ways.

Provision is also made for sending out circulating libraries to county medical societies arranged in circuits. For information, address the University Librarian, or Dean of the Faculty of Medicine.

### Animal House

The animal house is located near the Medical Laboratory Building. It is a brick structure, well lighted, heated and ventilated. This building provides excellent facilities for rearing and preserving animals, and for investigations in the various lines of medical science. It is of especial value for the experimental work in physiology, pathology and bacteriology.

### Other Buildings

In several other buildings on the University campus (chemistry, zoology, etc.), instruction is offered in many lines open to medical students as electives, and of especial service to those taking the combined curriculum in medicine and in arts and science. The gymnasium and athletic grounds are open for the use of all students, and special opportunities are offered to those interested.

## MEDICAL CURRICULUM

FIRST YEAR	Semester credits		Total hours		Total
	1st Sem.	2nd Sem.	Lecture	Laboratory	
Organic chemistry.....	3	3	68	85	153
Embryology.....	3	..	17	68	85
Dissection.....	10	..	34	348	382
Histology.....	..	6	17	170	187
Neurology.....	..	3	17	68	85
Bacteriology.....	..	3	17	85	102
Totals.....	16	15	170	824	994
SECOND YEAR					
Physiological chemistry..	3	..	17	85	102
Physiology 102a.....	3	..	34	42	76
Physiology 103a.....	6	..	51	127	178
Pharmacology.....	..	4	34	85	119
Pathology.....	4	4	51	238	289
Hygiene.....	..	2	34	..	34
Physical diagnosis.....	..	3	34	42	76
Minor surgery.....	..	2	17	42	59
Totals.....	16	15	272	661	933

The work above outlined in the regular medical curriculum provides a thorough training in the various subjects usually included in the first two years of medicine. It meets the requirements of the Association of American Medical Colleges, of which this school is a member, and follows closely the ideal courses in the laboratory subjects recommended by the Council on Medical Education of the American Medical Association. The individual courses are described in detail on the following pages.

## Courses in Detail

Courses preceded by a number with the letter a attached, thus: 100a, are given the first semester only. Those preceded by a number with the letter b attached, thus: 100b, are given the second semester only. Those preceded merely by a number are continuous courses and are given both semesters. The number of hours' credit given



for a course for each semester is indicated by the Arabic numerals following the statement of the course. Courses numbered 200 and above are strictly graduate in character.

For schedule of days and hours, application should be made to the registrar after August 1.

### ANATOMY AND HISTOLOGY

102a. **Dissection.** The study of the gross anatomy of the human body, excepting the central nervous system and the sense organs. For use in the study of osteology, which is correlated with the work in dissection, a complete disarticulated human skeleton is issued to every two students. Laboratory fee, \$14. Deposit for use of skeleton in addition, \$10. Fee, \$2. (10). Mr. CLARK; Mr. WHEELDON.

103b. **Normal Histology.** The study of microscopic anatomy of the tissues and organs of the human body, and also instruction and practice in the making of histological sections. Laboratory deposit, \$10. One lecture and five laboratory periods a week. (6). Mr. JOHNSON.

104b. **Neurology.** A study of the gross and microscopic anatomy of the central nervous system and sense organs. Two laboratory periods and one lecture a week. Laboratory deposit, \$5.00. (3). Mr. JOHNSON.

105a. **Topographic Anatomy.** Elective. Open only to students who have completed the courses in dissection, histology, and neurology. Laboratory deposit, \$5.00. (2). Mr. JOHNSON.

206. **Advanced Anatomy, Histology or Embryology.** Elective. The amount and character of the work will be varied to suit individual needs. This course is open only to students who have had the undergraduate courses in anatomy, histology, or embryology, and have shown their ability to work independently. Laboratory. Mr. CLARK Mr. JOHNSON.

207. **Research.** Problems for original investigation will be assigned in anatomy, histology, or embryology. A reading knowledge of French and German is required. Hours to be arranged. Mr. CLARK; Mr. JOHNSON.

### BACTERIOLOGY

102b. **Medical Bacteriology.** Prerequisite, botany, course 3a or 3b. In the laboratory work all the important species of pathogenic organisms are supplied for individual study. In addition, practical instruction is given in the bacteriological examination of pathological exudates and of water and milk. The lectures, along with the consideration of biological characteristics, are aimed to be introductory to general pathology. Two lectures and two laboratory periods a week. Laboratory fee, \$5. (3). Mr. RAVENEL; Mr. DUPRAY.

## CHEMISTRY

111. **Organic Chemistry.** A general survey of the principal classes of organic compounds, such as hydrocarbons, alcohols, phenols, ethers, aldehydes, acids, esters, fats, carbohydrates. In so far as it is possible, the student prepares in the laboratory representatives of the various classes of compounds and studies their reactions. Two lectures and one laboratory period a week. Laboratory fee, \$6.25 to \$7.25 (a deposit of \$10 is required). (3). Mr. CALVERT.

For other courses in chemistry, which may be elected, see courses in chemistry, College of Arts and Science.

## CLINICAL MEDICINE AND SURGERY

101b. **Physical Diagnosis.** An introductory course in the methods of physical diagnosis with drill in the technic upon normal and diseased subjects. Three periods a week. (3). Mr. MOSS.

102b. **Minor Surgery.** A systematic study of the elementary principles of surgery, including operative and aseptic technic and bandaging. Two periods a week. (2). Mr. MYER.

## PATHOLOGY

102. **Pathology and Pathological Anatomy.** This is essentially a laboratory course, supplemented by lectures and recitations, for the histological study of the general and special manifestations of disease. Each student is supplied with about three hundred sections which become his property. The corresponding gross material is afforded by a well equipped museum and by autopsies. Eight laboratory periods a week, including the lecture. (8). Mr. DOLLEY; Mr. MARTIN.

201a and 201b. **Advanced Pathology.** Elective. The amount and character of the work will depend upon the needs and qualifications of the student. In connection, opportunity will be afforded for practical experience in the handling of all kinds of morbid material. Hours to be arranged. Mr. DOLLEY; Mr. MARTIN.

202. **Research.** Elective. Opportunity is afforded to students sufficiently prepared for original investigation of unsolved problems in the fields of pathology and pathological physiology. A reading knowledge of German is required and one of French is recommended. A seminary is held once a week. Mr. DOLLEY.

203. **Normal and Abnormal Neuro-cytology.** Elective. The application of the general principles and theories of biology to the nerve cell in health and disease. The work will necessarily consist largely of original investigation and will be adjusted to the training of the student. Hours to be arranged. Mr. DOLLEY.

204a. **Pathological Physiology.** Elective. An experimental course. (2). Mr. DOLLEY; Mr. MARTIN.

**PHYSIOLOGY AND PHARMACOLOGY**

101a. **General Physiological Chemistry.** Prerequisite, organic chemistry, course 111. Physiological chemistry of the carbohydrates, fats, and proteins; of the cell and special tissues; of the blood; of secretions and of excretions; a quantitative study of the urine in relation to diet. Two lectures and two laboratory periods a week. (3). Mr. GULICK.

102a. **Physiology of Alimentary Mechanisms, Metabolism, and Reproduction.** Physiology of secretory processes, digestion, absorption, excretion, respiration, metabolism and energy exchange, heat regulation and production. One lecture and one laboratory period. (3). Mr. GULICK.

103a. **Experimental Physiology.** Physiology of muscle and nerve, circulation, respiration, nervous system and sense organs. (6). Mr. GREENE.

105b. **Experimental Pharmacology.** Physiological action of drugs. The experimental method is used throughout, the demonstration being made on man and lower animals. (4). Mr. GREENE; Mr. KEUSE.

104a and 104b. **Advanced Physiological Chemistry.** Elective. Mr. GULICK.

107b. **Toxicology.** Elective. Mr. GULICK.

206a. **Physiology of the Nervous System.** Elective. Mr. GREENE.

208. **Journal Club.** Elective. Mr. GREENE.

210. **Advanced Physiology.** Elective. Mr. GREENE; Mr. GULICK.

211. **Investigation.** Elective. Mr. GREENE; Mr. GULICK.

**PREVENTIVE MEDICINE**

1a and 1b. **Preventive Medicine.** Open as an elective to the students of all divisions of the University. (No medical credit.) The general principles of personal and public health, and of the application of preventive measures against disease. Lectures and demonstrations. (2). Mr. RAVENEL; Mr. DUPRAY.

101b. **General Hygiene.** Prerequisite, Medical Bacteriology, course 102b. Deals in a more detailed manner with the fundamental principles of public and personal hygiene and with the regulatory measures directed toward the improvement of general health. Three lectures a week. (2). Mr. RAVENEL.

**ZOOLOGY**

100a. **Embryology of Vertebrates.** Designed to lay the foundation of vertebrate embryology. Successive stages in the development of the frog, the chick and the pig are studied from preparations of entire embryos and from serial sections. These observations are used

as a basis of comparison for the study of human embryology. Laboratory fee, \$4. (3). Mr. LEFEVRE; Mr. TANNREUTHER.

For comparative anatomy, cytology and other courses in zoology open to medical students as electives, see announcement under College of Arts and Science.

### ELECTIVES

Courses in botany, psychology, zoology, etc., may be elected by students in the School of Medicine who are prepared to pursue them. See announcement of the College of Arts and Science. With the consent of the dean, medical students may take any accessory work offered in other departments of the University.

### MEDICAL CERTIFICATE

On completing the work outlined in the regular medical curriculum, the student is awarded a Medical Certificate at the following commencement. This certificate will admit him, with full credit for the first two years of medicine, to the leading medical schools, where abundant clinical facilities are available for the last two years' work. Care should be taken, however, to meet the detailed entrance requirements for the particular school chosen.

There is no disadvantage in thus changing to a new place for the clinical work, for there is a natural break in the medical curriculum at this time. Reason and experience agree that the first two years should be devoted to the fundamental medical sciences. For this work, thoroughly equipped laboratories are necessary. The student is unprepared for clinics, which at this time are apt even to constitute a harmful distraction. At the beginning of the third year, however, the medical student enters upon his clinical work, a new phase of the subject with different teachers, whether in the same or a different school.

### ENTRANCE REQUIREMENTS

The requirements for admission to the School of Medicine include:

(1) Fifteen units of secondary school work, including at least 3 units of English, 1 of algebra, 1 of plane geometry, 2 of latin, the remaining being elective. For further details, see general catalogue of the University.

(2) Two years (60 hours credit) of college work, including English, 5 hours; German, 5 hours; general zoology, 5 hours; general physics, 5 hours; inorganic chemistry, 5 hours; general bacteriology, 3 hours; elective, 32 hours. Equivalent work in foreign language may be substituted for the English and German.



All correspondence regarding admission should be addressed to the Dean of the University Faculty, Columbia, Missouri.

### COMBINED WORK IN ARTS AND MEDICINE

Students who have completed the secondary school work, as above outlined, but not the college work, are advised to enter the College of Arts and Science of the University to secure this work.

By the proper choice of electives in the College of Arts and Science, students may within four years complete the two years' college work required for admission, do the two years' work in medicine, and at the same time meet the requirements for the degree of Bachelor of Arts. Such students are registered during the first two years in the College of Arts and Science only. During the last two years, however, they must register both in the School of Medicine and in the College of Arts and Science and must meet the requirements of both. Students are recommended to elect the subjects required, or which lead up to subjects required in medicine, in approximately the order suggested by the following tabulated statement. The work outlined for the first and second years includes all the college work which is required for entrance to the regular medical curriculum.

The entrance requirements for the combined curriculum outlined below is that specified for the College of Arts and Science, i. e., a high school course equivalent to fifteen units. A student who follows this curriculum will, at the end of four years, have completed the requirements for the A. B. degree. He will also have completed the two years' work in medicine, and will require only two years more (or six years in all) for the M. D. degree. Students who wish to do more than the required amount of premedical collegiate work may extend the time to the amount desired. All students who contemplate taking this work should consult the Dean of the School of Medicine.



**CURRICULUM LEADING TO THE DEGREES OF A. B. AND M. D.  
RECOMMENDED BY THE MEDICAL FACULTY**

	First Semester Hours Credit	Second Semester Hours Credit
<b>FIRST YEAR</b>		
English.....	3	3
Elective.....	3	2
General zoology (1a).....	5	0
Chemistry, inorganic and analytical.....	5	5
General physics (2b).....	0	6
Physical training or military science.....	1	1
	17	17
<b>SECOND YEAR</b>		
Chemistry, organic.....	3	3
Embryology of vertebrates.....	3	0
*Ancient language.....	5	0
*History.....	0	5
*Logic.....	3	0
German.....	0	5
General bacteriology.....	0	3
Elective.....	2	0
	16	16
<b>THIRD YEAR</b>		
Same as first year of regular medical curriculum, with electives replacing embryology and organic chemistry.		
<b>FOURTH YEAR</b>		
Same as second year of regular medical curriculum.		

\*Note—When a prescribed minimum amount of high school work in corresponding subjects has been offered for entrance, other subjects may be substituted for those indicated.

**ADVANCED STANDING**

Every applicant for advanced standing is required to present credentials from an accredited college, and to pass such examinations as may be required to show satisfactory completion of courses equivalent to those for which he seeks credit.

Moreover, the usual entrance requirements to the first year class must be satisfied, and evidence of a good moral character must be presented to the dean of the School of Medicine.

### Special Students

Students may be admitted to the School of Medicine without passing the regular examinations required for entrance, under the following conditions: (1) They must be at least 21 years old; (2) they must show good reason for not taking a regular course; (3) they must pass such examinations or other tests as shall demonstrate fitness to pursue profitably the subjects selected by them. Such students are expected to do specially good work in the subjects which they choose. If at any period of the session the work becomes unsatisfactory, their connection with the University shall be severed by the dean of the school. They are not considered as candidates for the degree, and cannot be registered as regular students, unless they subsequently fulfill the regular entrance requirements. All correspondence regarding admission should be addressed to the Dean of the University Faculty, Columbia, Missouri.

### Postgraduate Course for Physicians

During the month of May, in each year, a special postgraduate course in clinical pathology and bacteriology is offered. This course is practical in character, and designed especially for the needs of the practitioner. A special circular of information will be sent upon request.

### Graduate Work in Medical Sciences

Special opportunity is given, and every encouragement is offered, to students who desire to do advanced work in any of the fundamental medical sciences. By a year of graduate work, the Master's Degree (A. M.) may be secured, and in three years the degree of Ph. D. Advanced work of the research type in the fundamental medical sciences is highly desirable as a basis for the most thorough work in clinical medicine. It is especially advantageous, however, for those students who desire to specialize with a view to becoming teachers in any of these branches. As previously mentioned, the demand for such teachers far exceeds the supply, and offers an attractive career which many graduates of this school have followed with success. Fellowships and scholarships are available to those who are qualified for graduate work. For further details, see general catalogue or separate announcement of the Graduate School, University of Missouri.

To conduct research work successfully, it is self-evident that the teachers themselves should be active investigators. Such teachers are, moreover, as is proved by experience, those whose interest and enthusiasm for their work is also the source of inspiration for their undergraduate students. From every point of view the encouragement of research work is therefore a matter of highest

importance. As substantial evidence of the activity of the medical school of the University of Missouri along this line, the following list of publications from the various laboratories for the present year may be of interest.

### PUBLICATIONS, 1913-14

#### 1. From the Department of Anatomy

Jackson, C. M., *Postnatal Growth and Variability of the Body and of Various Organs in Albino Rat*. American Journal of Anatomy, Vol. 15, 1913.

Johnson, F. P., *Development of Rectum*. American Journal of Anatomy, Vol. 16, 1914.

Johnson, F. P., *A Missouri Embryological Collection*. Journal Missouri State Medical Asso., 1914.

Johnson, F. P., *A Case of Atresia Ani in the Human Embryo*. (In press.)

Heldt, T. J., *Mollegard's Reticulum*. Journal of Comparative Neurology, Vol. 23, 1913.

Myers, J. A., *Studies on Syrinx of Gallus Domesticus*. (Ready for publication.)

#### 2. From the Department of Pathology and Bacteriology

Dolley, D. H., *The Morphology of Functional Depression in Nerve Cells and its Significance for the Normal and Abnormal Physiology of the Cell*. Journal of Medical Research. Vol. XXIX, 1913.

Dolley, D. H., *Fatigue of Excitation and Fatigue of Depression: A Comparison of the Reactive Effects of Function and of the By-Products of Function on the Nerve Cell*. Internat. Monatsschr. f. Anat. u. Physiol., Bd. XXX, 1914.

Dolley, D. H., *On Resuscitation*. University of Missouri Bulletin, Medical Series. Vol. I, No. 4.

Dolley, D. H., *The Relation Between Functional Activity and Depression in Nerve Cells from Anatomical Analysis*. Transactions. Amer. Med. Asso., 1913.

Dolley, D. H., *A Note on Nitrous Oxide as an Anesthetic in Animal Experimentation*. Jour. Exper. Med., Vol. XIX, 1914.

Mitchell, O. W. H., *Bacterin Tréatment of Pustular Acne and Furunculosis*. Journal Missouri State Medical Association. Oct. 1913,

Mitchell, O. W. H., *The Prevention of Tuberculosis*. University of Missouri Bulletin, Medical Series, No. 6.

Mitchell, O. W. H., *Water—The Prevention of its Pollution*. University of Missouri Bulletin, Medical Series, No. 7.

### 3. From the Department of Physiology, Physiological Chemistry and Pharmacology

Greene, C. W., Kruse, T. K., *The Bromid Question Experimentally Considered. I. The Responses of the Heart to Bromid Perfusion.* The Journal of the American Medical Association, Vol. LXI, pp. 271-273, 1913.

Greene, C. W., Skaer, W. F., *Evidence of Fat Absorption by the Mucosa of the Mammalian Stomach.* American Journal of Physiology, Vol. XXXII, p. 358, 1913.

### 4. From the Department of Preventive Medicine

Calvert, W. J., *Prevention of Contagious Diseases in School Children.* University of Missouri Bulletin, Medical Series, No. 3.

Noyes, G. L., *The Relation of Sight and Hearing to Early School Life.* University of Missouri Bulletin, Medical Series, No. 5.

#### Low Cost of Medical Education

Another advantage is the unusually low cost at which premedical and medical education of the highest type may here be obtained. In order to show what it actually costs, statistics have been collected from both premedical and medical students of the University of Missouri, showing the total expenses for the school year. The approximate average cost per student is indicated for each item.

Average cost for	Premedical (1st and 2nd yrs. of combined course)	Medical (3rd and 4th yrs. of combined course)
Board.....	\$112	\$112
Room.....	48	48
Library, hospital and incidental fees.....	20	20
Laboratory fees.....	30	40
Books and stationery.....	20	30
Clothing.....	50	50
Incidentals.....	65	75
Average total.....	\$345	\$375

Tuition at the Universty of Missouri is free, but students who are nonresidents of Missouri pay a tuition fee of \$10 a semester.

From the above table it is evident that the average total cost for the school year is about \$345 in the premedical, and \$375 in the medical years. The average is, of course, considerably higher than necessary, due to those who are able to afford many luxuries. The minimum figures, however, show that by economy, the cost

may easily be reduced \$100 below the total average given above. Thus the total cost for the four years is less than that for two years of medicine alone in many of the prominent schools.

### **Opportunity for Self-Support**

In the case of students working their way through (about half of the class) the net cost is even reduced considerably lower. It is therefore evident that by earning at least \$100 more during the summer vacation it is possible for the average student to pay his entire way through the premedical and medical years. This is actually accomplished by a considerable number of students. Students who desire work should apply to the Employment Bureau, Y. M. C. A., University of Missouri. As a rule, every student should have at least \$100 ahead at the start, and those who come before school opens have the best chance for employment. Board and room may be obtained in the University dormitories and The Commons for about \$3.25 a week, but applications for rooms must be filed early, as the space is limited.

### **Rollins Scholarship**

The Rollins Scholarship in the School of Medicine is a prize of fifty dollars which is awarded by vote of the medical faculty to that member of the first year class (third year of combined curriculum) who has made the best record during the course.

### **Medical Society**

For many years the medical students have regularly conducted a medical society which has been very successful. At the monthly meetings the program consists of papers by students, supplemented by talks from faculty members or other visiting guests. Premedical students are eligible to membership.

### **Register of Students**

At commencement in June, 1914, the Medical Certificate was awarded to fourteen students. During the session 1913-14 there were enrolled thirty-three in the first year class, twenty-three in the second year class, nineteen special students in the School for Nurses, a total of seventy-five. The names of these students are published in the general catalogue of the University.

### **High Standing of the School of Medicine**

The School of Medicine of the University is rated in the highest class by the Council on Medical Education of the American Medical Association. It is also a member of the Association of American



Medical Colleges. In the report of the Carnegie Foundation published in 1910, the facilities of the Medical School of the University of Missouri are summarized (p. 251) as follows: "The medical department occupies a new and well equipped building, excellently adapted to its purposes. The teaching is in charge of full-time instructors of modern training and ideals. A university hospital of 45 beds gives the department the advantage of clinical material and connection, even though the actual instruction is limited to the work of the first two years, a feature of great importance. There is a library supplied with important current periodicals, domestic and foreign."

### THE PARKER MEMORIAL HOSPITAL

Guy L. Noyes, M. D.....Superintendent  
 Frances Shouse, R. N.....Principal of the School for Nurses

By the gift of Wm. L. Parker, the University has an excellent hospital, which has now been in operation for 13 years. In the words of the donor, the hospital is "for the benefit of the School of Medicine." The building is a handsome, modern structure, conveniently located on high ground at the west side of the campus.

A surgical amphitheatre adjoining the hospital has been provided by the gift of the late Adolphus Busch of St. Louis. It is supplied with accessory rooms for sterilizing, anæsthetizing, etc.

The Parker Memorial Hospital is owned and operated by the University primarily for the benefit of the University students. It is also open to the sick of Missouri for the treatment of acute and chronic curable diseases. Those who suffer from chronic incurable, or dangerous communicable diseases, are not admitted to the hospital.

Patients are admitted to the hospital at any hour of the day. Those living outside of Columbia should make application in advance for admission, preferably through their family physician, who should send with the application for admission a brief statement concerning the nature of the patient's illness.

Application for admission should be addressed to the Superintendent of the Hospital.

Lectures and demonstrations are given from time to time in the hospital for the benefit of the students of medicine and the pupil nurses.

### Rates and Terms

The following rates are for the maintenance of patients who are not students of the University, including bed, board, and general nursing:

General medical and surgical cases: Single rooms, \$15 a week and upward; wards, \$10 a week and upward.

Obstetrical cases: \$25 a week.

Special nursing may be had at the regular rates for such service.

Extra fees will be charged for medicines, dressings, and the use of the operating room or its equipment. Fees for maintenance are payable invariably in advance.

Physicians who hold consultation with or give treatment to patients not resident in the hospital, and require therefore the attendance of a nurse or the use of the equipment of the hospital, must pay a minimum fee of \$1 for such privilege.

Students of the University of Missouri, regularly enrolled as such are (with certain exceptions) given free hospital care. Those who can afford to do so are expected to pay for medical services.

### **The School for Nurses**

The School for Nurses of the University of Missouri was organized in 1901. The school is conducted in connection with the Parker Memorial Hospital.

Pupil nurses receive their training in the hospital and laboratories of the University. Nurses have access to the libraries and museums of the University at all times.

The course of instruction is thorough and familiarizes the pupils with the theory and practice of nursing in all its details. The course covers a period of three years of twelve months each. The first three months of residence in the school are probationary, and at the expiration of that time the pupil is regularly enrolled as a member of the school, provided she is found to be acceptable.

A special announcement giving detailed information concerning the School for Nurses will be sent in response to requests addressed to the Principal of the School for Nurses, Parker Memorial Hospital, University of Missouri, Columbia, Missouri.

# UNIVERSITY CALENDAR AT COLUMBIA

1914

**Summer Session**

June 11	Thursday, registration.
June 12	Friday, organization of classes.
July 4	Saturday, holiday.
August 6	Thursday, lectures close.
August 7	Friday, examinations.
August 8	Saturday, entrance examinations.

**First Semester**

September 14, 15, 16	Monday, Tuesday and Wednesday, entrance examinations and registration.
September 17	Thursday, 8 a. m., class work in all divisions begins.
September 17	Thursday, 10 a. m., opening convocation.
October 1	Thursday, quarterly meeting of curators.
November 3	Tuesday, election day, holiday.
November 26	Thursday, Thanksgiving, holiday.
December 15	Tuesday, annual meeting of curators.
December 18	

1915

January 4	Friday, 4 p. m. to } Christmas holidays.
January 23	Monday, 8 a. m. }
January 30	Saturday to } Mid-year examinations.
January 28, 29, 30	Saturday }
	Thursday, Friday and Saturday, entrance examinations.

**Second Semester**

February 1, 2	Monday and Tuesday, registration, second semester.
February 3	Wednesday, 8 a. m. class work in all divisions begins.
February 4	Thursday, 10 a. m., opening convocation.
February 22	Monday, Washington's Birthday, holiday.
April 1	Thursday, quarterly meeting of curators.
April 1	Thursday, 4 p. m. to } Easter holidays.
April 7	Wednesday, 8 a. m. }
May 30	Sunday, baccalaureate address.
May 31, June 1	Monday and Tuesday, senior class exercises.
June 2	Wednesday, alumni day.
June 3	Thursday, commencement day.
June 3	Thursday, semi-annual meeting of curators.
June 4	Friday to } Final examinations.
June 11	Friday }

### THE UNIVERSITY OF MISSOURI

The University of Missouri stands at the head of the educational system of the state. It is one of the oldest institutions in the West.

The University was founded at Columbia in 1839 and instruction in academic work was begun in 1841. Few schools in the United States have made the advancement that Missouri has made during the last fifteen years. In 1897 the enrollment was only 805 and in 1913 it was more than 3,600. The increased enrollment is but indicative of the development of the school in educational efficiency.

The work of the University is now carried on in the following Schools and Colleges:

- College of Arts and Science
- College of Agriculture
- School of Education
- School of Law
- School of Medicine
- School of Engineering
- School of Mines and Metallurgy
- School of Journalism
- School of Commerce
- Graduate School
- Extension Division

All of these divisions are at Columbia with the exception of the School of Mines and Metallurgy, which is located at Rolla. In addition emphasis is given particular lines of work by the establishment of minor divisions, the chief of which are the Agricultural Experiment Station, the Engineering Experiment Station, and the Missouri State Military School.

The fundamental aim of the University is the development of the highest and most efficient type of citizen. The school is supported by the state and endeavors to return to the state practical service. Of later years the University has endeavored to go beyond the campus in its influence on the welfare of the people of Missouri. Extension courses, experiment farms, and free literature on practical subjects are some of the methods adopted. The various extension courses have proven highly satisfactory and have rendered real service to people of the state who previously benefited only indirectly from the University.

The University is located at Columbia, a town situated half way between St. Louis and Kansas City near the center of the state. It is reached by the Wabash, and the Missouri, Kansas and Texas Railways. Columbia is a progressive and prosperous town having doubled its population in the last few years. It has nearly twenty miles of paved streets.

The University grounds cover more than seven hundred acres. The main divisions are in the west campus, the east campus, Rollins Field for athletics, and the agricultural college farm.

The following University buildings are located at Columbia: Academic Hall; Laws Observatory; separate buildings for chemistry; physics; zoology and geology; law; engineering, manual arts; two power houses; Medical Laboratory Building; Parker Memorial Hospital; Agricultural Building; Horticultural Building; green houses; Live-Stock Judging, Dairy, Farm Machinery, Poultry, and Veterinary Buildings, and the agricultural college farm barns and buildings; Schweitzer Hall for agricultural chemistry; Switzler Hall, for the School of Journalism; Benton and Lathrop Halls, dormitories for men; Read Hall and Sampson Hall, dormitories for women; Rothwell Gymnasium; the houses for the President of the University and the Dean of the College of Agriculture; the Gordon Hotel Building for home economics; the high school, and the elementary school buildings used for practice schools in the School of Education.

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Full information regarding the University is given in the catalogue which will be sent on request without charge. For this or special bulletins of the Graduate School, College of Arts and Science, College of Agriculture, School of Education, School of Law, School of Medicine, School of Engineering, School of Journalism, School of Commerce, and the Extension Division, write to

DEAN OF THE UNIVERSITY FACULTY,

UNIVERSITY OF MISSOURI,

*Columbia, Missouri.*







THE  
UNIVERSITY OF MISSOURI  
BULLETIN

VOLUME 15

Issued Three Times Monthly

GENERAL SERIES

EDITED BY

HUGH J. MacKAY

*University Publisher*

The General Series of The University of Missouri Bulletin consists of the announcements of the various colleges and schools which make up the University. These announcements will be sent free upon request to the Dean of the University Faculty, Columbia, Missouri.

Published by

UNIVERSITY OF MISSOURI

COLUMBIA, MISSOURI

Entered as second-class matter at the postoffice, Columbia, Missouri.

3500



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JUL 12 1915

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VOLUME 16      NUMBER 18

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1915, No. 9

ANNOUNCEMENT  
OF THE  
SCHOOL OF MEDICINE  
1915-16



UNIVERSITY OF MISSOURI  
COLUMBIA, MISSOURI  
June, 1915





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COLUMBIA, MISSOURI  
June, 1915

# UNIVERSITY CALENDAR

## AT COLUMBIA

1915

### Summer Session

June 10 .....Thursday, registration  
 June 11 .....Friday, organization of classes  
 August 6.....Friday, examinations  
 August 7.....Saturday, entrance examinations

### First Semester

September 13, 14, 15.....Monday, Tuesday, and Wednesday, entrance examinations and registration  
 September 16.....Thursday, 8 a. m., class work in all divisions begins  
 September 16.....Thursday, 10 a. m., opening convocation  
 November 1 to December 17..First term, short course in agriculture  
 November 25 .....Thursday, Thanksgiving, holiday  
 December 17 .....Friday, 4 p. m., to

1916

January 4.....Tuesday, 8 a. m. } Christmas holidays  
 January 10 to February 26..Second term, short course in agriculture  
 January 22.....Saturday, to } Mid-year examinations  
 January 29.....Saturday }  
 January 27, 28, 29.....Thursday, Friday, and Saturday, entrance examinations

### Second Semester

January 31, February 1.....Monday and Tuesday, registration, second semester  
 February 2.....Wednesday, 8 a. m., class work in all divisions begins  
 February 3.....Thursday, 10 a. m., opening convocation  
 February 22.....Tuesday, Washington's Birthday, holiday  
 April 19.....Wednesday, 4 p. m., to } Easter holidays  
 April 25.....Tuesday, 8 a. m. }  
 May 28.....Sunday, baccalaureate address  
 June 1 .....Thursday, commencement day  
 June 2.....Friday, to } Final examinations  
 June 9.....Friday }

# The Profession of Medicine

The following pages will be devoted to a brief consideration of certain questions of interest to all who expect to follow the profession of medicine. It is important that all prospective medical students should know the present status of medicine, its advantages and disadvantages as a profession, the opportunities which it offers and the qualifications necessary for success. It is especially important that the general principles underlying sound medical education be clearly understood and that data be made available which will enable those interested to judge of the relative merits of the numerous medical schools in this country.

## ADVANTAGES AND DISADVANTAGES OF MEDICINE AS A PROFESSION

Some of the more obvious disadvantages of medicine as a profession may first be mentioned. Among these are the irregularity of the work, the exposure and danger, the severity of physical and mental strain, and the relatively poor remuneration in comparison with the necessary skill and education. It should be clearly understood that competition is severe, for the medical profession (like most others) is overcrowded. Moreover, with the increase of popular knowledge regarding hygiene and preventive medicine, the need for medical service is in some respects diminishing.

As an offset to the foregoing, however, the medical profession has numerous advantages to offer to those properly qualified. In the first place, for those who achieve eminence by reason of unusual ability and thoro training, the financial rewards are great. Every really well-qualified practitioner is reasonably sure of a good income.

Money, however, is by no means the chief attraction which the profession of medicine has to offer. There is a fascination about the work which is difficult to explain, but which is nevertheless characteristic. Successful practitioners enjoy their work, in spite of hardships and difficulties. Moreover, even in this materialistic age, the philanthropic aspect of the practice of medicine appeals strongly to many. From this point of view, no profession offers greater opportunity for public and private service.

Another phase of medical work, which to many is more attractive than the ordinary practice, is that of teaching and investigation in the various medical sciences. There is at present a strong demand, which is likely to continue, for well-trained men who will

devote themselves to anatomy, physiology, pathology, and other branches of medical science. While not so remunerative as the practice of medicine, positions in these and similar branches offer good salaries and an attractive career to those whose tastes and talents incline toward teaching and research.

Finally, so far as competition is concerned, there is no question that the medical profession is overcrowded, but it is *overcrowded with incompetents*. It is true that our leading physicians rank among the best in the world. But on the other hand, owing to the low standards of medical education which have prevailed during the past, it must be confessed that the rank and file of medical practitioners average very low in efficiency. Nowhere is it more emphatically true that "there's plenty of room at the top." No man of reasonable ability with thoro collegiate and professional training need fear the competition. And as the general public is learning to discriminate more carefully, the demand for well-qualified physicians grows stronger. It is therefore exceedingly important for the prospective medical student to consider carefully the qualifications necessary for success in this profession, in order that he may prepare himself accordingly.

### PREMEDICAL EDUCATION

For success in any applied science, two things are necessary: first, to master the science; and second, to learn how to apply it. To master the difficult science of modern medicine, it is absolutely necessary to have a thoro preliminary scientific training.

The amount and character of the necessary preliminary training for medicine is a theme which has been much discussed in recent years. While there are still different views concerning details, there is with reference to the essential points a general consensus of opinion among those entitled to speak with authority in this matter. The first point which should be emphasized is that a *high-school education alone is insufficient*, especially in science, to prepare a student for the difficult medical curriculum of today. The necessity for collegiate work preliminary to medicine is so important and so clearly recognized that it is now required by law in ten states, including Minnesota, Iowa, North and South Dakota, Kansas, Indiana, Connecticut, Colorado, Utah, and Vermont.

In these states, in order to be admitted to examination for license to practice, one must show that he took at least one or two years of collegiate work, in addition to the equivalent of a four years' high school course, before entering a medical school. Before the time when those now entering medicine will be graduated, this legal requirement will doubtless be established in many other states.



Students should therefore beware of entering medicine without preliminary collegiate work.

While it is generally recognized that at least one or two years of preliminary collegiate work are necessary, few will urge, as a general requirement, the completion of four years of college work before entering medicine. Indeed it is probable that as a general rule this is an unnecessary expense of time and money, and postpones unduly the age at which practice begins.

Taking all things into consideration, it is the consensus of opinion that the requirement of two years of collegiate work for entrance best meets present conditions. This, it may be noted, is approximately equivalent to the entrance requirement for medicine in the leading European nations. An admirable solution of the problem of preliminary medical education is found in the "combined curriculum" in arts and medicine, whereby it is possible to secure the A. B. degree and also the M. D. within six years.

As to the character of the collegiate work preparatory to medicine, there is now a general agreement of opinion. The old idea that there exists an ideal collegiate course, classical or otherwise, which prepares for any vocation is now abandoned. The present elective system makes it desirable for one to decide upon his future career as early as possible, and to plan his college course so as to prepare himself for the greatest possible efficiency in his life work.

What subjects, then, should the premedical college course include? First and foremost, it should be so planned as to give a thorough training in biology, especially zoology. Most of the accurate and useful knowledge we have concerning the laws of life is derived from careful study and experimentation upon lower forms of life.

In order to understand the nature and conditions of life, it is therefore further evident that one must have a thorough knowledge of physics and chemistry. As time goes on, biology in general and medicine in particular are based more and more upon the fundamental laws of physics and chemistry. Having laid a good foundation in physics, chemistry, and zoology, the student is prepared for the more specialized biological sciences, anatomy, physiology, and pathology; and these in turn lead up to the technical courses in clinical medicine.

Other sciences valuable for the medical student are botany and experimental psychology. Of mathematics, enough should be taken to facilitate the work in physics and chemistry. In languages, excepting an elementary knowledge of Latin (usually taken in the high school), French and German are most valuable. This is especially true of German, since a large proportion of the most important biological and medical work is published in that language.

The advantages of a premedical scientific college course as outlined above are well summarized by the following quotation (from the Journal of the American Medical Association, May 27, 1911): "As a part of the education which should be preliminary to the study of medicine, courses in physics, chemistry, biology, and modern languages have been especially urged during the last several years by the Council on Medical Education. The importance of the sciences named does not depend so much on the bare knowledge obtained from them as on training the student receives. In the work in these sciences, and particularly in the laboratory work, the student, under able instructors, acquires the ability to think for himself; he develops the scientific spirit; he learns the use of the microscope and becomes acquainted with the methods and value of experimentation. A reading knowledge of French and German is an invaluable aid to the medical knowledge, a large portion of which appears in the languages named. That is the minimum preliminary education which should be insisted upon in this country, not because it is the minimum requirement in every other civilized nation, which is a fact, but because the student really needs that training in order to master the complex courses in the modern medical curriculum and to do his part in solving the intricate problems which now confront the medical world. In the medical course of today the ability of the student to think, to observe and to do research work is very essential. Experience has shown that the needed qualifications are best developed by thoro courses, under expert teachers, in physics, chemistry, biology, and modern languages. These are the reasons for urging those courses as a part of the minimum requirement for admission to the medical schools in this country."

### MEDICAL EDUCATION

Presupposing the preliminary college training as above outlined, the medical education proper may next be considered. What are the subjects included in the medical curriculum, and what facilities are necessary in order that they may be successfully taught? As previously stated, medicine is an applied science. Broadly speaking, therefore, it is necessary first to master the subject matter, the fundamental medical sciences, and then to learn how to apply these in clinical medicine, in the prevention and cure of disease. Medical education therefore falls naturally into two subdivisions, the fundamental work occupying the first two years, and the clinical work the last two (or three, if a hospital year be added). Each of these periods will be considered briefly, following which some data will be cited whereby the relative merits of the various medical schools may be judged.

### Fundamental Medical Education:

The fundamental sciences upon which medicine is directly based may be grouped under three headings. The first of these, the anatomical group, includes those which concern primarily the normal form and structure of the human body. These include gross anatomy (dissection, osteology, neurology, topographic anatomy, etc.), microscopic anatomy (histology) and developmental anatomy (embryology). The second, or physiological group, includes those studies which concern primarily the normal functions of the living organism. In this group, in addition to physiology in the narrower sense, we may place organic and physiological chemistry, and also pharmacology, which deals with the effects of drugs upon the normal organism. The third group, known as pathology (including bacteriology) deals with the abnormal conditions of structure and function which are associated with disease. Finally, there is the subject of hygiene and preventive medicine, which lies in the borderland between the fundamental sciences previously mentioned, and the succeeding subjects in clinical medicine.

It is impossible within the limits of this bulletin to discuss in detail the requisites for thoro instruction in the fundamental sciences. Those desiring to look into this matter more fully are referred to a work entitled *A Model Medical Curriculum*, a report of a committee of one hundred leading educators, issued by the Council on Medical Education of the American Medical Association, 535 Dearborn Ave., Chicago, Ill.

It may be noted briefly that the old-fashioned didactic method of teaching by lectures and recitations from books has been completely revolutionized and replaced by the laboratory method, whereby the student directly observes and studies the phenomena for himself. The laboratory method of instruction requires for success two essential factors. First and most important, the teachers in the various laboratory subjects must be thoroly trained specialists, who are paid salaries to devote their entire time to this work, and are not allowed to practice medicine. They should moreover be active investigators whose enthusiasm will be an inspiration to their students. The second factor includes the facilities, buildings, equipment, and materials for thoro work in each of the laboratories for the various fundamental medical sciences. These two factors, the full-time, thoroly-trained teachers and the numerous well-equipped laboratories are so costly as to be out of the reach of most medical schools, but they are necessary in order to obtain the thoro laboratory instruction which is essential in modern medical education.

Another necessity, the importance of which is becoming more clearly recognized, is a good medical library. This should include

several thousand well-chosen volumes for reference, including files of one hundred or more of the leading medical periodicals of the world. A good medical library is also very expensive, but is necessary for the best work in instruction, and absolutely essential for research.

### **Clinical Medical Education:**

When the student has completed the first two years of the curriculum and has mastered the fundamental medical sciences, he is familiar with the structure and functions of the human body, both normal and abnormal, and is ready to learn how to apply these principles at the bedside for the alleviation and cure of disease. This final period of medical education is designated clinical medicine. It includes two broad groups, internal medicine and surgery, each with numerous subdivisions. Here also lack of space prevents a discussion of each of the numerous special branches, for a full consideration of which the reader may consult the work *A Model Medical Curriculum* previously referred to. In passing, however, it may be remarked that for successful clinical teaching the essentials are very similar to those already stated for the laboratory sciences. The teachers should be skilled and experienced, each a recognized authority in his particular line. Here also it is highly desirable that salaries should be paid so that the teacher's whole time may be devoted to instruction and investigation, tho very few schools are financially able to carry out this policy. The laboratory of the clinical work is the hospital, and it is essential for successful clinical work that each school should own or absolutely control the clinical facilities in a large hospital with a sufficient number of beds in each of the various clinical branches. Certain clinical laboratories must also be provided.

On account of the heavy expenses involved in providing salaried teachers, laboratory and hospital facilities, it is axiomatic that no school can depend solely upon students' fees for support. Private endowment or state support on a liberal scale is essential to provide medical education fully up to modern standards.

The minimum facilities considered absolutely necessary in order that a medical college may be able to give a satisfactory training up to modern standards in both fundamental and clinical subjects are, according to the Council on Medical Education of the American Medical Association, as follows:

### **Essentials of An Acceptable Medical College:**

1. Strict enforcement of all standards and requirements, the college itself to be held responsible for any instances where they are not enforced.



2. A requirement for admission of at least a 4-year high school education superimposed on eight years of grammar school work, as defined by the College Entrance Examination Board.

3. Beginning January 1, 1914, the minimum requirement for admission should be enlarged to include at least one year's college work each in physics, chemistry, and biology and a reading knowledge of at least one modern language, preferably German or French.

4. A requirement that students be in actual attendance in the college within the first week of each annual session and thereafter.

5. That actual attendance at classes be insisted on except for good cause, such as for sickness, and that no credit be given under any circumstances for less than 80 per cent of attendance on each course.

6. That advanced standing be granted only to students of other acceptable colleges and that in granting advanced standing there shall be no discrimination against the college's full-course students.

7. Careful and intelligent supervision of the entire school by a dean or other executive officer who holds, and has sufficient authority to carry out, fair ideals of medical education as interpreted by modern demands.

8. A good system of records showing conveniently the credentials, attendance, grades, and accounts of the students.

9. A fully-graded course covering four years of at least 32 weeks each, exclusive of holidays, and at least 30 hours a week of actual work; this course should be clearly set forth in a carefully prepared and printed schedule of lectures and classes.

10. Two years of work consisting largely of laboratory work in thoroly equipped laboratories in anatomy, histology, embryology, physiology, chemistry (inorganic, organic and physiologic), bacteriology, pathology, pharmacology, therapeutics, and clinical diagnosis.

11. Two years of clinical work largely in hospitals and dispensaries, with thoro courses in internal medicine (including physical diagnosis, pediatrics, nervous and mental diseases), surgery (including surgical anatomy and operative surgery on the cadaver), obstetrics, gynecology, laryngology, rhinology, ophthalmology, otology, dermatology, hygiene, and medical jurisprudence.

12. As soon as conditions warrant, a fifth undergraduate year should be required which should be spent by the student as an interne in an approved hospital.

13. At least six expert, thoroly trained professors in the laboratory branches, salaried so that they may devote their entire time to instruction and to that research without which they cannot well keep up with the rapid progress being made in their subjects. These professors should have a definite responsibility in the conduct of the college, and their first and chief interest should be in the training



of the medical students. There should also be a sufficient number of assistants in each department to look after the less important details. A suggested assignment of these instructors is (a) professor of anatomy, (b) professor of physiology, (c) professor of pathology and bacteriology, and (d) professor of physiologic chemistry and pharmacology. The other two might be associate or assistant professors and assigned one to the laboratory course in histology and embryology under the professor of anatomy and the other to the department of pathology and bacteriology.

14. The medical teaching should be of at least the same degree of excellence as obtains in our recognized liberal art colleges and technical schools.

15. The faculty should be thoroly organized and, with a few allowable exceptions, should be made up of graduates of institutions recognized as medical colleges and should have had a training in all departments of medicine. They should be appointed because of their ability as teachers and not because they happen to be on the attending staff of some hospital or for other like reasons.

16. The college should own or entirely control a hospital in order that students may come into close and extended contact with patients under the supervision of the attending staff. The hospital should have a sufficiently large number of patients to permit the student to see and study the common variety of surgical and medical cases as well as a fair number in each of the so-called specialties.

17. The college should have easily accessible hospital facilities of not less than 200 patients which can be utilized for clinical teaching (for senior classes of 100 students or less), these patients to represent in fair proportion all departments of medicine.

18. The college should have additional hospital facilities for children's diseases, contagious diseases, and nervous and mental diseases.

19. Facilities for at least six maternity cases for each senior student, who should have actual charge of these cases under the supervision of the attending physician. Careful records of each case should be handed in by the student.

20. Facilities for at least thirty autopsies during each college session which are attended and can be participated in by senior students (for senior classes of 100 students or less).

21. A dispensary, or out-patient department, under the control of the college, the attendance to be a daily average of 60 cases (for senior classes of 100 students or less), the patients to be carefully classified, good histories and records of the patients to be kept and the material to be well used.

22. The college should have a working medical library to include the more modern text and reference books with the Index Medicus and thirty or more leading medical periodicals; the library room should be properly lighted and heated, and easily accessible

to students during all or the greater part of the day; it should be equipped with suitable tables and chairs, and have a librarian in charge.

23. A working medical museum having its various anatomic, embryologic, pathologic and other specimens carefully prepared, labeled, and indexed so that any specimen may be easily found and employed for teaching purposes. It is suggested that so far as possible with each pathologic specimen coming from post-mortems there also be kept the record of the post-mortem, the clinical history of the patient on whom the autopsy was held and microscopic slides showing the minute structures of the disease shown in the gross specimen.

24. There should be sufficient dissecting material to enable each student individually to dissect at least the lateral half of the human cadaver; to provide cross-sections and other demonstration material and to allow of a thoro course for each senior in operative surgery on the cadaver.

25. A supply of such useful auxiliary apparatus as a stereopticon, a reflectoscope, carefully prepared charts, embryologic or other models, manikins, dummies for use in bandaging, a Roentgen-ray, and other apparatus now so generally used in medical teaching.

26. The college should show evidences of thoro organization and of reasonably modern methods in all departments and evidences that the equipment and facilities are being intelligently used in the training of medical students.

27. A clear statement of the college's requirements for admission, tuition, time of attendance on the classes, sessions, courses offered and graduation should be clearly set forth, together with complete classified lists of its matriculants and latest graduating class in regular annual catalogs or announcements.

### CRITERIA FOR JUDGING SCHOOLS

Having in mind the essential elements involved in a thoro pre-medical and medical education, it devolves upon the prospective student to select the school which he will attend. This is a critical problem, and grave mistakes are often made thru lack of knowledge regarding the various schools. With regard to the premedical college work, the problem is less difficult, but it is essential to choose a college well equipped for teaching the fundamental sciences of biology, physics, and chemistry. In general, these are best taught in the stronger universities, such as those in the Association of American Universities.\*

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\*This association includes the following universities: California, Catholic University of America, Chicago, Clark, Columbia, Cornell, Harvard, Illinois, Indiana, Iowa, Johns Hopkins, Kansas, Leland Stanford, Jr., Michigan, Minnesota, Missouri, Nebraska, Pennsylvania, Princeton, Virginia, Wisconsin, and Yale.

In choosing a school for the medical curriculum proper, the problem is much more complicated. Bearing in mind the essential principles previously outlined, the most important information desirable is indicated in the following questions:

1. As to organization, is it an independent medical school, or an integral (not merely nominal) department of a strong university?
2. What is the amount of the income and expenditure? Is the income dependent solely upon students' fees, or is it supported liberally by endowment or state appropriations?
3. What is the extent and character of the laboratory and clinical facilities, its buildings, equipment, library?
4. What is the character of the faculty? Are the teachers full-time salaried experts, or are they allowed to engage in the private practice of medicine? To what extent are they contributing to the advancement of medical science by original research?
5. Do the entrance requirements include a minimum of two years of college work, and are they strictly enforced?
6. What is the character of the curriculum, stress laid upon practical work in laboratory and clinics, opportunity for research, etc.?
7. Are the classes large, or are they small, allowing individual attention to each student?
8. What are the tuition fees and expenses?
9. What is the general standing of the school, its rating by competent and disinterested organizations, and its efficiency as measured by the results of the examination of its graduates before the various state licensing boards?

#### WHERE TO FIND INFORMATION

Where can the prospective student find reliable data in answer to the preceding questions? Much can of course be learned from the catalogs of the various schools, but in many cases it must be confessed that the information contained therein is incomplete, and even misleading. It may therefore be of service to those interested in this matter to know where to find reliable data from disinterested sources.

In the first place, a list of the medical schools of the United States together with brief information (furnished, however, by the schools themselves) is published in the chapter on "Professional Schools" in the annual report of the Commissioner of Education, U. S. Bureau of Education, Department of the Interior, Washington, D. C. A reprint of this chapter is obtainable and is useful for reference.

Similar information, which is more complete in some respects, is published each year during August in the "Educational Number" of the Journal of the American Medical Association (Chicago).

The Council on Medical Education of the A. M. A. has made a thoro personal inspection and investigation of the various medical schools of the country, and has rated them in four classes: Class "A plus" colleges are those which are acceptable (24 colleges); class "A," those which need improvement in certain respects, but which are otherwise acceptable (42 colleges); class "B," those which, under their present organization, might be made acceptable by general improvements (24 colleges); and class "C," those which require a complete reorganization to make them acceptable (29 colleges).

Another basis for judgment is to be found in the membership of the Association of American Medical Colleges, with about 50 schools, including nearly all of the better class. A list of the members is published annually in the Educational Number of the Journal A. M. A. above referred to, or may be obtained from the Secretary, Dr. F. C. Zapffe, 3431 Lexington St., Chicago, Ill.

## The School of Medicine

In the foregoing pages the profession of medicine has been considered with especial reference to the principles underlying sound medical education, and the facilities necessary according to modern standards. Attention is now called to the School of Medicine of the University of Missouri, and to the advantages which it offers in providing facilities for obtaining at low cost both premedical and medical education measuring up to the high standards previously outlined.

### Aim of the School of Medicine:

The aim of the School of Medicine is threefold:

- (1) To give a thoro laboratory training in those scientific subjects which are fundamental to medicine and form an indispensable preparation for the clinical work.
- (2) To contribute to the advancement of medicine by original investigation in the various sciences upon which modern medicine is based.
- (3) To promote the diffusion of medical knowledge among the citizens of the state.

### HISTORICAL STATEMENT

The Medical Department of Kemper College ("McDowell Medical College"), founded in St. Louis in 1840, was the first medical school established west of the Mississippi River. In 1845 this school became the Medical Department of the University of Missouri. In 1855, however, it was discontinued; but was reestablished in Columbia in December, 1872. The curriculum was at first only two years in length, but was extended to three years in 1891, and to the full four years in 1899.

Owing to the limited clinical facilities available at present, the last two (clinical) years of the medical curriculum have been temporarily suspended. A plan for the establishment of a general state hospital has been adopted by the University, and the clinical portion of the work will be resumed as soon as it is practicable to establish it with adequate clinical facilities. In the meantime, the first two years of the medical curriculum will be continued at Columbia and still further strengthened.

The School of Medicine has always stood for the highest standards of medical education, and was a pioneer in introducing and developing the laboratory method. Laboratory work in anatomy, chemistry, and microscopy was required of students from the date of reestablishment in 1872. A few years later laboratory work in pathol-



ogy and in physiology was added, and in 1891 the laboratories of histology and bacteriology were established. The School of Medicine of the University of Missouri was also one of the first schools to place these fundamental medical sciences in charge of specialists who are not allowed to practice medicine, but devote their time exclusively to teaching and investigation.

### **Organization and Support:**

As has been previously emphasized, the nature of the organization and support of a medical school is a matter of primary importance. The medical school of the University of Missouri is an integral part of the University, whose total income from all sources is about \$1,125,000 a year. The medical school is supported from this income, about \$50,000 being expended annually for this purpose (including hospital), while less than \$3,000 is collected in fees from the medical students.

As a result of this liberal support, it has been possible for many years to organize and maintain the medical work on a proper University basis. The course of study is carefully planned, modern laboratory methods being used thruout. The high standards of admission result in small classes (not more than twenty-five in each) prepared for the highest type of work. Women are admitted on equal terms with men.

## **HIGH STANDING OF THE SCHOOL OF MEDICINE**

The School of Medicine of the University is rated in the highest class by the Council on Medical Education of the American Medical Association. It is also a member of the Association of American Medical Colleges. In the report of the Carnegie Foundation published in 1910, the facilities of the School of Medicine of the University of Missouri are summarized (p. 251) as follows: "The medical department occupies a new and well-equipped building, excellently adapted to its purposes. The teaching is in charge of full-time instructors of modern training and ideals. A university hospital of forty-five beds gives the department the advantage of clinical material and connection, even tho the actual instruction is limited to the work of the first two years, a feature of great importance. There is a library supplied with important current periodicals, domestic and foreign."

### **Low Cost of Medical Education:**

Another advantage is the unusually low cost at which premedical and medical education of the highest type may here be obtained. In order to show what it actually costs, statistics have been collected from both premedical and medical students of the University

of Missouri, showing the total expenses for the school year. The approximate average cost per student is indicated for each item.

Average cost for	Premedical (1st and 2d yrs. of combined course)	Medical (3rd and 4th yrs. of combined course)
Board.....	\$112	\$112
Room.....	48	48
Library, hospital and incidental fees.....	24	24
Laboratory fees.....	30	40
Books and stationery.....	20	30
Clothing.....	50	50
Incidentals.....	65	75
Average total.....	\$349	\$379

Tuition at the University of Missouri is free, but students who are nonresidents of Missouri pay a tuition fee of \$10 a semester.

From the above table it is evident that the average total cost for the school year is about \$349 in the premedical, and \$379 in the medical years. The average is, of course, considerably higher than necessary, due to those who are able to afford many luxuries. The minimum figures, however, show that by economy the cost may easily be reduced \$100 below the total average given above. Thus the total cost for the four years is less than for two years of medicine alone in many of the prominent schools.

#### **Opportunity for Self-Support:**

In the case of students working their way thru (about half of the class) the net cost is even reduced considerably lower. It is therefore evident that by earning at least \$100 more during the summer vacation it is possible for the average student to pay his entire way thru the premedical and medical years. This is actually accomplished by a considerable number of students. Students who desire work should apply to the Employment Bureau, Y. M. C. A., University of Missouri. As a rule, every student should have at least \$100 ahead at the start, and those who come before school opens have the best chance for employment. Board and room may be obtained in the University dormitories and The Commons for about \$3.25 a week, but applications for rooms must be filed early, as the space is limited.

#### **Rollins Scholarship:**

The Rollins Scholarship in the School of Medicine is a prize of \$50 which is awarded by vote of the medical faculty to that member

of the first year class (third year of combined curriculum) who has made the best record during the course.

#### **Medical Society:**

For many years the medical students have regularly conducted a medical society which has been very successful. At the monthly meetings the program consists of papers by students, supplemented by talks from faculty members or other visiting guests. Premedical students are eligible to membership.

#### **Register of Students:**

At commencement in June, 1915, the Medical Certificate was awarded to fifteen students. During the session 1914-15 there were enrolled 39 in the first year class, 26 in the second year class, 17 special students of which 14 were in the School for Nurses, a total of 82. The names of these students are published in the general catalog of the University.

### **BUILDINGS AND EQUIPMENT**

Next to the faculty, among the factors which determine the efficiency, come the buildings and material equipment. The School of Medicine is located upon the same campus with other divisions of the University. Of the various buildings on the campus, a group of three—the Medical Laboratory Building, the Parker Memorial Hospital and the animal house—are devoted primarily to the School of Medicine. These will be described in some detail. Several other buildings are also utilized in part for medical instruction.

#### **Medical Laboratory Building:**

The Medical Laboratory Building is a stone and brick building, 48x150 feet, three stories high. It was especially designed for the medical laboratories, and is well equipped to meet the needs of modern laboratory instruction and research. The following is a brief list of the various rooms and equipment in this building.

The department of anatomy and histology occupies a large dissecting room, well lighted and ventilated, with dissecting tables, students' lockers, display cases for specimens, models; an advanced anatomical laboratory, specially equipped for the study of topographic anatomy, including serial sections thru formalin hardened bodies; histological laboratory, with preparation and store-room in connection, thoroly equipped with lockers, tables, microscopes, microtomes, and other apparatus for instruction and research in microscopic work; lecture room for anatomy and histology, equipped with Auzoux manikin, projection apparatus, charts; museum and study room; with adjacent preparation room, containing a large number of models and specimens in human anatomy; research laboratory; embalming and

storage rooms, with an abundance of well-preserved cadavers for the work in dissection.

The department of physiology, physiological chemistry, and pharmacology occupies the following rooms: a large laboratory with adjoining store-room, equipped with tables, lockers, and sets of apparatus for the students in physiology and pharmacology; a blood-pressure room, particularly for mammalian experiments; a research laboratory, thoroly equipped, for advanced students in physiology and pharmacology; research laboratory in physiological chemistry; large students' laboratory with adjacent store-room, thoroly equipped for work in physiological chemistry; animal room; mechanic's shop; lecture room (in common with pathology).

The departments of pathology and bacteriology, occupy a large students' laboratory for bacteriology and pathological histology, well-equipped with lockers, microscopes with oil immersion lenses; a preparation room for bacteriology, with sterilizers, incubators; private laboratory, well-equipped for research work in pathology; room for autopsies and work in gross pathology, including a collection of pathological specimens in glass cases; an animal room and storeroom; office and research laboratory for bacteriology; lecture room (in common with physiology); laboratory room for work of preventive medicine.

#### **Medical Library:**

No medical school of today can be considered well equipped without a good library. The medical library is placed in a room on the upper floor of the Medical Laboratory Building, and is open eight hours daily, except Sunday. It contains 5,752 bound volumes, and a large number of pamphlets. The principal medical works of reference are included and 100 leading medical periodicals of the world are received regularly and placed on file. Complete sets of most of these journals are available. The main University Library also contains many works of interest and value to the medical sciences.

A complete catalog of the books and periodicals in the medical library will be furnished free by the University Librarian upon request. The journals and books in the library will be lent free to any reputable physician of the state. The borrower is required to pay the transportation charges both ways.

Provision is also made for sending out circulating libraries to county medical societies arranged in circuits. For information, address the University Librarian, or Déan of the Faculty of Medicine, University of Missouri, Columbia, Mo.

#### **Animal House:**

The animal house is located near the Medical Laboratory Building. It is a brick structure, well lighted, heated, and ventilated. This

building provides excellent facilities for rearing and preserving animals, and for investigations in the various lines of medical science. It is of especial value for the experimental work in physiology, pathology, and bacteriology.

#### **Other Buildings:**

In several other buildings on the University campus (chemistry, zoology, etc.), instruction is offered in many lines open to medical students as electives, and of especial service to those taking the combined curriculum in medicine and in arts and science. The gymnasium and athletic grounds are open for the use of all students, and special opportunities are offered to those interested.

### **ENTRANCE REQUIREMENTS**

The requirements for admission to the School of Medicine include:

(1) Fifteen units of secondary school work, including at least 3 units of English, 1 of algebra, 1 of plane geometry, 2 of Latin, the remaining being elective. For further details, see general catalog of the University.

(2) Two years (60 hours' credit) of college work, including French or German, 8 hours; general zoology, 8 hours; general physics, 8 hours; inorganic chemistry, 8 hours; general bacteriology, 3 hours; elective, 25 hours.

All correspondence regarding admission should be addressed to the Dean of the University Faculty, University of Missouri, Columbia, Missouri.

#### **Special Students:**

Students may be admitted to the School of Medicine without passing the regular examinations required for entrance, under the following conditions: (1) They must be at least 21 years old; (2) they must show good reason for not taking a regular course; (3) they must pass such examinations or other tests as shall demonstrate fitness to pursue profitably the subjects selected by them. Such students are expected to do specially good work in the subjects which they choose. If at any period of the session the work becomes unsatisfactory, their connection with the University shall be severed by the dean of the school. They are not considered as candidates for the degree, and cannot be registered as regular students, unless they subsequently fulfill the regular entrance requirements. All correspondence regarding admission should be addressed to the Dean of the University Faculty, Columbia, Missouri.



**Advanced Standing:**

Every applicant for advanced standing is required to present credentials from an accredited college, and to pass such examinations as may be required to show satisfactory completion of courses equivalent to those for which he seeks credit.

Moreover, the usual entrance requirements to the first year class must be satisfied, and evidence of a good moral character must be presented to the dean of the School of Medicine.

**COMBINED WORK IN ARTS AND MEDICINE**

Students who have completed the secondary school work, as above outlined, but not the college work, are advised to enter the College of Arts and Science of the University to secure this work.

By the proper choice of electives in the College of Arts and Science, students may within four years complete the two years' college work required for admission, do the two years' work in medicine, and at the same time meet the requirements for the degree of Bachelor of Arts. Such students are registered during the first two years in the College of Arts and Science only. During the last two years, however, they must register both in the School of Medicine and in the College of Arts and Science and must meet the requirements of both. Students are recommended to elect the subjects required, or which lead up to subjects required in medicine, in approximately the order suggested by the following tabulated statement. The work outlined for the first and second years includes all the college work which is required for entrance to the regular medical curriculum.

The entrance requirements for the combined curriculum outlined below is that specified for the College of Arts and Science, i. e., a high school course equivalent to fifteen units. A student who follows this curriculum will, at the end of four years, have completed the requirements for the A. B. degree. He will also have completed the two years' work in medicine, and will require only two years more (or six years in all) for the M. D. degree. Students who wish to do more than the required amount of premedical collegiate work may extend the time to the amount desired. All students who contemplate taking this work should consult the dean of the faculty of medicine.

Curriculum Leading to the Degrees of A. B. and M. D. Recommended by the Medical Faculty:

FIRST YEAR	First Semester Hours Credit	Second Semester Hours Credit
English.....	3	3
*German 1a and 2b, or French 1a and 2b.....	5	5
Physics 1a and 5b.....	5	3
*Logic 1b, or Mathematics 8b.....	3	0
*History 1b, or Greek 1b.....	0	5
Physical training, or Military Science.....	1	1
	17	17
SECOND YEAR		
*Zoology 1a and 4b.....	5	5
*Chemistry 4a and 25b.....	5	5
General Bacteriology 3b.....	0	3
*Greek 1a, or History 1a.....	5	0
Elective.....	1	3
	16	16
THIRD YEAR		
Same as first year of regular medical curriculum, with electives replacing embryology and organic chemistry.		
FOURTH YEAR		
Same as second year of regular medical curriculum.		

The subjects marked with \* fulfill the underclassmen requirements for the College of Arts and Science. When a student presents acceptable advanced credits taking the place of such subjects, electives may be substituted. The subjects required of all pre-medical students are:

German or French.....	8 hours
Physics.....	8 hours
Zoology.....	8 hours
Chemistry.....	8 hours
General Bacteriology.....	3 hours

See *Entrance Requirements*, page 19.

Pre-medical students should keep in mind the desirability of observing certain sequences when planning the work of the first two years of the combined curriculum. The proper sequences are the following:

*The Physical Group.*

- (1) Elementary Physics, 1a or b.
- (2) Elementary Physics, 4b.

*The Chemical Group.*

- (1) Elementary Inorganic Chemistry, 1b.
- (2) Analytical Chemistry, 25a or b.

- (3) Organic Chemistry, 111.
- (4) Physiological Chemistry, 101a, offered the first semester of the senior medical year.

*The Biological Group.*

- (1) General Zoology, 1a or b.
- (2) Comparative Anatomy of Vertebrates, 4b.
- (3) Embryology of Vertebrates, 100a.
- (4) Gross Anatomy, 102a.
- (5) Normal Histology, 103b.
- (6) Neurology, 104b.
- (7) Experimental Physiology, 103a, offered the first semester of the senior medical year.

*The Bacteriological-Pathological Group.*

- (1) General Bacteriology 3a or 3b.
- (2) Medical Bacteriology 102b, offered the second semester of the junior medical year.

### MEDICAL CURRICULUM

FIRST YEAR	Semester credits		Total hours		
	1st Sem.	2nd Sem.	Lecture	Laboratory	Total
Organic chemistry.....	3	3	68	85	153
Embryology.....	3	..	17	68	85
Gross Anatomy.....	10	..	34	348	382
Histology.....	..	6	17	170	187
Neurology.....	..	3	17	68	85
Bacteriology.....	..	4	34	85	119
Totals.....	16	16	187	824	1011
SECOND YEAR					
Physiological chemistry.....	4	..	34	85	119
Physiology, 102a.....	2	..	17	42	59
Physiology, 103a.....	6	..	51	127	178
Pharmacology.....	..	4	34	85	119
Pathology.....	3	5	51	238	289
Hygiene.....	..	2	34	..	34
Physical diagnosis.....	..	3	34	42	76
Minor surgery.....	..	2	17	42	59
Totals.....	15	16	272	661	933

The work above outlined in the regular medical curriculum provides a thoro training in the various subjects usually included in the first two years of medicine. It meets the requirements of the Association of American Medical Colleges, of which this school is a member, and follows closely the ideal courses in the laboratory subjects recommended by the Council on Medical Education of the American Medical Association. The individual courses are described in detail on the following pages.

### STATEMENT OF COURSES

Courses preceded by a number with the letter *a* attached, thus, 100a, are given the first semester only. Those preceded by a number with the letter *b* attached, thus, 100b, are given the second semester only. Those preceded merely by a number are continuous courses and are given both semesters. The number of hours' credit given for a course for each semester is indicated by the Arabic numerals following the statement of the course. Courses numbered 200 and above are strictly graduate in character.

Schedule of days, hours, and rooms follows the description of courses. Where no schedule is given the hours are to be arranged later by the teacher. All classes in the School of Medicine meet in the Medical Building unless otherwise indicated.

### ANATOMY

**102a. Gross Anatomy.** The study of the gross anatomy of the human body, excepting the central nervous system and the sense organs. For use in the study of osteology, which is correlated with the work in dissection, a complete disarticulated human skeleton is issued to every two students. 11 W in 37; 8-12 M F, 8-10 T W Th, 1-4 M W F in 33. (10) Mr. CLARK; Mr. WHEELDON.

**103b. Normal Histology.** The study of microscopic anatomy of the tissues and organs of the human body, and also instruction and practice in the making of histological sections. 10-12 D in 36, 3 M in 37. (6) Mr. JOHNSON.

**104b. Neurology.** A study of the gross and microscopic anatomy of the central nervous system and sense organs. 8-10 M W in 36, 9 F in 37. (3) Mr. JOHNSON; Mr. WHEELDON.

**105a. Topographic Anatomy.** Elective. Open only to students who have completed the courses in gross anatomy, histology and neurology. 1-4 T Th in 34. (2) Mr. JOHNSON.

**206. Advanced Anatomy.** Elective. Prerequisites, courses 102a, 103b, or 104b laboratory. Advanced work will be given in any of the special fields of anatomy, the amount and character of which will be varied

to suit individual needs. Mr. CLARK; Mr. JOHNSON.

207. **Research.** Problems for original investigation will be assigned in anatomy, histology, or embryology. A reading knowledge of French and German is required. Hours to be arranged. Mr. CLARK; Mr. JOHNSON.

### BACTERIOLOGY AND PREVENTIVE MEDICINE.

102b. **Medical Bacteriology.** Prerequisite, botany, course 3a or b. Subjects studied include relation of bacteria to disease; the fundamental principles of immunity, serum diagnosis, serum and vaccine therapy. The different diseases are discussed, and the micro-organisms causing them are studied in the laboratory, with animal inoculations and demonstrations. The course includes also the study of the best known diseases caused by protozoa. 8 F in 22, 1-4 T Th in 23. (4) Mr. RAVENEL; Mr. DUPRAY.

103b. **General Hygiene.** Prerequisite, course 102b. Deals in a more detailed manner with the fundamental principles of public and personal hygiene and with the regulatory measures directed toward the improvement of general health. 3 T Th in 22. (2) Mr. RAVENEL.

201. **Advanced Bacteriology.** Elective. Prerequisite, course 102b. Amount and character of work will depend on needs and qualifications of student. The manufacture of autogenous vaccines, the determination of the opsonic index, making and use of various sera, study of milk and water are among the subjects suggested for study. Hours to be arranged. Mr. RAVENEL; Mr. DUPRAY.

202. **Research.** Elective. Prerequisite, course 102b. Students who are sufficiently prepared will be given problems requiring original investigation in the fields of bacteriology and public health. A reading knowledge of French and German recommended. Hours to be arranged. Mr. RAVENEL; Mr. DUPRAY.

203. **Conduct of Public Health Laboratories.** Elective. Prerequisites, course 102b and 201. Designed for those who expect to take up such work as a profession or for teaching purposes. Graduates in medicine preferred. The collection and shipment of various specimens, their examination, milk, and water problems etc., will be discussed and the practical work carried out in the laboratory. Hours to be arranged. Mr. RAVENEL; Mr. DUPRAY.

### CHEMISTRY

111. **Organic Chemistry.** General survey of the principal classes of organic compounds, such as hydrocarbons, alcohols, phenols, ethers, aldehydes, acids, esters, fats, carbohydrates. Student prepares in the laboratory representatives of the various classes of compounds and



studies their reactions. 1-4 T Th in 3 and 12 Chem. Building. (3) Mr. CALVERT.

For other courses in chemistry, which may be elected, see announcement of courses in chemistry in the annual catalog.

### CLINICAL MEDICINE AND SURGERY

101b. **Physical Diagnosis.** An introductory course in the methods of physical diagnosis with drill in the technic upon normal and diseased subjects. 1-4 M W F. (3) Mr. Moss.

102b. **Minor Surgery.** A systematic study of the elementary principles of surgery, including operative and aseptic technic and bandaging. 1-4 M W F. (2) Mr. MYER.

### PATHOLOGY

101. **Pathology and Pathological Anatomy.** A laboratory course, supplemented by lectures and recitations, for the histological study of the general and special manifestations of disease. Each student is supplied with about 300 sections which become his property. The corresponding gross material is afforded by a well-equipped museum and by autopsies. *First semester:* 1-4 T Th in 23; *Second semester:* 8-12 M W, 9-12 F in 23. (8) Mr. DOLLEY; Mr. MARTIN.

201a or b. **Advanced Pathology.** Elective. The amount and character of the work will depend upon the needs and qualifications of the student. In connection, opportunity will be afforded for practical experience in the handling of all kinds of morbid material. Hours to be arranged. Mr. DOLLEY; Mr. MARTIN.

202. **Research.** Elective. Opportunity is afforded to students sufficiently prepared for original investigation of unsolved problems in the fields of pathology and pathological physiology. A reading knowledge of German is required and one of French is recommended. A seminary is held once a week. Mr. DOLLEY.

203. **Normal and Abnormal Neuro-cytology.** Elective. The application of the general principles and theories of biology to the nerve cell in health and disease. The work will necessarily consist largely of original investigation and will be adjusted to the training of the student. Hours to be arranged. Mr. DOLLEY.

204a. **Pathological Physiology.** Elective. An experimental course. (2) Mr. DOLLEY; Mr. MARTIN.

### PHYSIOLOGY AND PHARMACOLOGY

101a. **General Physiological Chemistry.** Prerequisite, organic chemistry, course 111. Physiological chemistry of the carbohydrates, fats, and proteins; of the cell and special tissues; of the blood; of

respiration; of secretions and of excretions; a quantitative study of the urine in relation to diet. 9 T Th in 22, 1-4 M W in 6. (4) Mr. GULICK; Mr. CARTER.

**102a. Physiology of Secretion, Alimentary Mechanisms, and Reproduction.** Physiology of secretory processes, digestion, absorption, excretion, respiration, metabolism and energy exchange, heat regulation, and production. 11 T Th in 22, 1-4 F in 26. (2) Mr. KRUSE; Mr. SUMMERS.

**103a. Experimental Physiology.** Physiology of the circulation, respiration, muscle and nerve; nervous system, and sense organs. 8 M W F in 22, 9-12 M W F in 26. (6) Mr. GREENE; Mr. KRUSE.

**105b. Experimental Pharmacology.** Physiological action of drugs. The experimental method is used thruout, the demonstrations being made on man and lower animals. 8 T Th in 22, 9-12 T Th in 26. (4) Mr. GREENE; Mr. KRUSE.

**210. Advanced Physiology.** Elective. Advanced courses in physiology, pharmacology and physiological chemistry. Individual problems will be assigned to students of sufficient preparation. Mr. GREENE; Mr. GULICK.

**211. Investigation.** Elective. Opportunity is offered for research in questions of current interest in either of the fields represented. Mr. GREENE; Mr. GULICK.

## ZOOLOGY

**100a. Embryology of Vertebrates.** Foundation of vertebrate embryology. Successive stages in the development of the frog, the chick, and the pig are studied from preparations of entire embryos and from serial sections. These observations are used as a basis of comparison for the study of human embryology. 3 W, 10-12 T Th in 112 Biology Bldg. (3) Mr. LEFEVRE; Mr. TANNREUTHER.

For comparative anatomy, cytology, and other courses in zoology open to medical students as electives, see announcement under College of Arts and Science.

## ELECTIVES

Courses in botany, psychology, zoology, may be elected by students in the School of Medicine who are prepared to pursue them. See announcement of the College of Arts and Science in the annual catalog. With the consent of the dean, medical students may take any accessory work offered in other departments of the University.

## MEDICAL CERTIFICATE

On completing the work outlined in the regular medical curriculum, the student is awarded a Medical Certificate at the following

commencement. This certificate will admit him, with full credit for the first two years of medicine, to the leading medical schools, where abundant clinical facilities are available for the last two years' work. Care should be taken, however, to meet the detailed entrance requirements for the particular school chosen.

There is no disadvantage in thus changing to a new place for the clinical work, for there is a natural break in the medical curriculum at this time. Reason and experience agree that the first two years should be devoted to the fundamental medical sciences. For this work, thoroly equipped laboratories are necessary. The student is unprepared for clinics, which at this time are apt even to constitute a harmful distraction. At the beginning of the third year, however, the medical student enters upon his clinical work, a new phase of the subject with different teachers, whether in the same or a different school.

### GRADUATE WORK IN MEDICAL SCIENCES

Special opportunity is given, and every encouragement is offered, to students who desire to do advanced work in any of the fundamental medical sciences. By a year of graduate work, the Master's Degree (A. M.) may be secured, and in three years the degree of Ph. D. Advanced work of the research type in the fundamental medical sciences is highly desirable as a basis for the most thoro work in clinical medicine. It is especially advantageous, however, for those students who desire to specialize with a view to becoming teachers in any of these branches. As previously mentioned, the demand for such teachers far exceeds the supply, and offers an attractive career which many graduates of this school have followed with success. Fellowships and scholarships are available to those who are qualified for graduate work. For further details, see general catalog or separate announcement of the Graduate School, University of Missouri.

To conduct research work successfully, it is self-evident that the teachers themselves should be active investigators. Such teachers are, moreover, as is proved by experience, those whose interest and enthusiasm for their work is also the source of inspiration for their undergraduate students. From every point of view the encouragement of research work is therefore a matter of highest importance. As substantial evidence of the activity of the medical school of the University of Missouri along this line, the following list of publications from the various laboratories for the present year may be of interest.

### PUBLICATIONS 1914-15

#### 1. From the Department of Anatomy:

Clark, Eliot R. and Eleanor L., "*On the Early Pulsations of the Posterior Lymph Hearts in the Chick Embryos: Their Relation to*

the Body Movements." *Journal of Experimental Zoology*, Vol. 17, No. 3, 1914.

Clark, Eliot R., "*An Anomaly of the Thoracic Duct with a Bearing on the Embryology of the Lymphatic System.*" *Contributions to Embryology*, No. 3, 1915, Carnegie Institution of Washington.

Clark, Eliot R., "*Studies of the Growth of Blood Vessels, by Observations of Living Tadpoles and by Experiments on Chick Embryos.*" *Proceedings of American Association of Anatomists. Anatomical Record*, Vol. 9, No. 1, 1915.

Clark, Eliot R., Revision of Chapter on "*Lymphatics.*" *Morris' Anatomy*, 1914.

Johnson, Franklin P., "*A Case of Atresia ani in a Human Embryo of 26 mm.*" *Anatomical Record*, Vol. 8, 1914. "*A Human Embryo of Twenty-two Segements.*" Ready for Publication.

Wheeldon, Thomas F., "*Demonstration of Models of the Heart of a 20mm Pig.*" *Annual Meeting American Association Anatomists*, Dec. 1914.

Clark, Eleanor Linton, "*Observations of the Lymph-flow and the Associated Morphological Changes in the Early Superficial Lymphatics of Chick Embryos.*" *Proceedings of American Association of Anatomists. Anatomical Record*, Vol. 9, No. 1, 1915.

## 2. From the Department of Pathology:

Dolley, D. H., "*On a Law of Species Identity of the Nucleus-Plasma Norm for Nerve Cell Bodies of Corresponding Type.*" *Jour. Comp. Neurol.*, Vol. 24, 1914, 445.

Kurtz, D. W. B., Jr., "*The Morphological Identity of the Remote Nerve Cell Changes in Surgical Shock with those of Natural Senility.*" (In press.)

## 3. From the Department of Physiology, Physiological Chemistry, and Pharmacology.

Greene, C. W. and Carl H., "*The Skeletal Musculature of the King Salmon, *Oncorhynchus tshawytscha*.*" *Bulletin U. S. Bureau Fisheries*, Vol. 133, 1914.

Greene, C. W., "*The Storage of Fat in the Muscular Tissue of the King Salmon and its Resorption During the Fast of the Spawning Migration.*" *Bulletin U. S. Bureau of Fisheries*, Vol. 33, 1914.

Greene, C. W., "*The Fat Absorbing Function of the Alimentary Tract of the King Salmon, *Oncorhynchus tshawytscha*.*" *Bulletin U. S. Bureau of Fisheries*, Vol. 33, 1914.

Greene, C. W., "*Kirk's Handbook of Physiology*," 780 pages, 509 figures, 8th American Edition, William Wood and Co., New York.

Greene, C. W., "*Handbook of Pharmacology*," 396 pages, 70 illustrations, William Wood and Co., New York.

Gulick, A., "A Simplification of the Determination of Total Nitrogen by Colorimetry." The Journal of Biological Chemistry, Vol. 18, 1914.

4. From the Department of Preventive Medicine and Bacteriology:

Mitchell, O. W. H., "Water—The Prevention of Its Pollution." University of Missouri Bulletin, Medical Series, No. 7.

Ravenel, Mazyck P., "The House Fly." University of Missouri Bulletin, Extension Series, No. 11.

Ravenel, Mazyck P., "The Education of Health Officers." Journal of the American Medical Association, Nov. 7, 1914.

Ravenel, Mazyck P., "Preventive Medicine—Its Accomplishments and its Aim." University of Missouri Bulletin, Medical Series, No. 8.

Ravenel, Mazyck P., "An Unusual Result Following Anthrax Vaccination and a Lesson." American Veterinary Review, March 1915.

5. From the Department of Clinical Medicine and Surgery:

Myer, Max W., "Autoplastic and Homeoplastic Transplantation of Kidney Tissue." Archiv. für Entwicklungsmechanik des Organismen, B. XXXVII, H. I.

### POSTGRADUATE COURSE FOR PHYSICIANS

During the month of May, in each year, a special postgraduate course in clinical pathology and bacteriology is offered. This course is practical in character, and designed especially for the needs of the practitioner. A special circular of information will be sent upon request.

### THE PARKER MEMORIAL HOSPITAL

GUY L. NOYES, M. D.....*Superintendent*

FANNIE McLEOD.....*Principal of the School for Nurses*

AUGUSTA C. HADBACRE, R. N...*Head Nurse in the Student Health Service*

By the gift of Wm. L. Parker, the University has an excellent hospital, which has now been in operation for 14 years. In the words of the donor, the hospital is "for the benefit of the School of Medicine." The building is a handsome, modern structure, conveniently located on high ground at the west side of the campus.

A surgical amphitheatre adjoining the hospital has been provided by the gift of the late Adolphus Busch of St. Louis. It is supplied with accessory rooms for sterilizing, anæsthetizing, etc.

The Parker Memorial Hospital is owned and operated by the University primarily for the benefit of the University students. It is also open to the sick of Missouri for the treatment of acute and chronic curable diseases. Those who suffer from chronic incurable, or dangerous communicable diseases, are not admitted to the hospital.



Patients are admitted to the hospital at any hour of the day. Those living outside of Columbia should make application in advance for admission, preferably thru their family physician, who should send with the application for admission a brief statement concerning the nature of the patient's illness.

Application for admission should be addressed to the Superintendent of the Hospital.

Lectures and demonstrations are given from time to time in the hospital for the benefit of the students of medicine and the pupil nurses.

#### **Rates and Terms:**

The following rates are for the maintenance of patients who are not students of the University, including bed, board, and general nursing:

General medical and surgical cases: Single rooms, \$15 a week and upward; wards, \$10 a week and upward.

Obstetrical cases: \$25 a week.

Special nursing may be had at the regular rates for such service.

Extra fees will be charged for medicines, dressings, and the use of the operating room or its equipment. Fees for maintenance are payable invariably in advance.

Physicians who hold consultation with or give treatment to patients not resident in the hospital, and require therefore the attendance of a nurse or the use of the equipment of the hospital, must pay a minimum fee of \$1 for such privilege.

Students of the University of Missouri, regularly enrolled as such are (with certain exceptions) given free hospital care and treatment.

### **THE SCHOOL FOR NURSES**

The school for Nurses of the University of Missouri was organized in 1901. The school is conducted in connection with the Parker Memorial Hospital.

Pupil nurses receive their training in the hospital and laboratories of the University. Nurses have access to the libraries and museums of the University at all times.

The course of instruction is thoro and familiarizes the pupils with the theory and practice of nursing in all its details. The course covers a period of three years of twelve months each. The first three months of residence in the school are probationary, and at the expiration of that time the pupil is regularly enrolled as a member of the school, provided she is found to be acceptable.

A special announcement giving detailed information concerning the School for Nurses will be sent in response to requests addressed to the Principal of the School for Nurses, Parker Memorial Hospital, University of Missouri, Columbia, Missouri.

## FACULTY OF THE SCHOOL OF MEDICINE

- ALBERT ROSS HILL, A. B., Ph. D., LL. D.,  
*President of the University.*
- GUY LINCOLN NOYES, M. D.  
*Professor in the Department of Clinical Medicine and Surgery,  
Superintendent of Parker Memorial Hospital, Acting Dean of  
the Faculty.*
- SIDNEY CALVERT, B. S., A. M.,  
*Professor of Organic Chemistry.*
- ELIOT ROUND CLARK, A. B., M. D.,  
*Professor of Anatomy.*
- DAVID HOUGH DOLLEY, A. B., A. M., M. D.,  
*Professor of Pathology.*
- CHARLES WILSON GREENE, A. B., A. M., Ph. D.,  
*Professor of Physiology.*
- GEORGE LEFEVRE, A. B., Ph. D.,  
*Professor of Zoology.*
- WOODSON MOSS, M. D., LL. D.,  
*Professor in the Department of Clinical Medicine and Surgery.*
- MAX WASHINGTON MYER, A. B., M. D.,  
*Professor in the Department of Clinical Medicine and Surgery.*
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*Assistant in Anatomy.*

FANNIE MCLEOD,

*Principal of the School for Nurses.*

AUGUSTA C. HARDACRE, R. N.,

*Head Nurse in the Student Health Service.*

## THE UNIVERSITY OF MISSOURI

The University of Missouri stands at the head of the educational systems of the state. It is one of the oldest institutions in the West.

The University was founded at Columbia in 1839 and instruction in academic work was begun in 1841. Few schools in the United States have made the advancement that Missouri has made during the last fifteen years. In 1897 the enrollment was only 805 and in 1914 it was more than 3,800. The increased enrollment is but indicative of the development of the school in educational efficiency.

The work of the University is now carried on in the following schools and colleges:

- College of Arts and Science
- College of Agriculture
- School of Education
- School of Law
- School of Medicine
- School of Engineering
- School of Mines and Metallurgy
- School of Journalism
- School of Commerce
- Graduate School
- Extension Division

All of these divisions are at Columbia with the exception of the School of Mines and Metallurgy, which is located at Rolla. In addition emphasis is given particular lines of work by the establishment of minor divisions, the chief of which are the Agricultural Experiment Station, the Engineering Experiment Station, and the Missouri State Military School.

The fundamental aim of the University is the development of the highest and most efficient type of citizen. The school is supported by the state and endeavors to return to the state practical service. Of later years the University has endeavored to go beyond the campus in its influence on the welfare of the people of Missouri. Extension courses, experiment farms, and free literature on practical subjects are some of the methods adopted. The various extension courses have proven highly satisfactory and have rendered real service to people of the state who previously benefited only indirectly from the University.

The University is located at Columbia, a town situated half way between St. Louis and Kansas City near the center of the state. It is reached by the Wabash, and the Missouri, Kansas and Texas Railways. Columbia is a progressive and prosperous town having

doubled its population in the last few years. It has nearly twenty miles of paved streets.

The University grounds cover more than 800 acres. The main divisions are in the west campus, the east campus, the athletic fields, and the University farm.

The following University buildings are located at Columbia: Academic Hall; Laws Observatory; separate buildings for chemistry, physics, biology, commerce and geology, engineering, manual arts, law; two power houses; Library Building; Medical Laboratory Building; Parker Memorial Hospital; Agricultural Building; Horticultural Building; Schweitzer Hall for agricultural chemistry; green houses; Live Stock Judging, Poultry, Dairy, Farm Machinery, and Veterinary Buildings; the University farm barns and buildings; Switzler Hall for the School of Journalism; Gordon Hotel Building for home economics; Benton and Lathrop Halls, dormitories for men; Read Hall and Sampson Hall, dormitories for women; Rothwell Gymnasium; the houses for the President of the University and the Dean of the faculty of Agriculture; the High School and the Elementary School buildings, used for practice schools in the School of Education. The new library building will be occupied in the course of the summer of 1915.

#### FOR FURTHER INFORMATION

For further information concerning the School of Medicine, address  
DEAN, FACULTY OF MEDICINE,  
UNIVERSITY OF MISSOURI,  
COLUMBIA, MISSOURI.

Full information regarding the University is given in the catalog, which will be sent on request without charge. For this or special bulletins of the College of Arts and Science, College of Agriculture, School of Education, School of Law, School of Medicine, School of Engineering, School of Journalism, School of Commerce, Extension Division and the Graduate School, write to

DEAN OF THE UNIVERSITY FACULTY,  
UNIVERSITY OF MISSOURI,  
COLUMBIA, MISSOURI.







THE  
UNIVERSITY OF MISSOURI  
BULLETIN

GENERAL SERIES

EDITED BY  
HUGH J. MacKAY  
*University Publisher*

The General Series of The University of Missouri Bulletin consists of the announcements of the various colleges and schools which make up the University. These announcements will be sent free upon request to the Dean of the University Faculty, Columbia, Missouri.

Published by  
UNIVERSITY OF MISSOURI  
COLUMBIA, MISSOURI

The University of Missouri Bulletin—issued  
three times monthly; entered as second class  
matter at the postoffice, Columbia, Missouri.

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OF THE  
UNIVERSITY OF ILLINOIS

# THE UNIVERSITY OF MISSOURI BULLETIN

VOLUME 17    NUMBER 20

GENERAL SERIES  
1916, No. 7

ANNOUNCEMENT  
OF THE  
SCHOOL OF MEDICINE  
1916-1917



UNIVERSITY OF MISSOURI  
COLUMBIA, MISSOURI  
AUGUST, 1916





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UNIVERSITY OF MISSOURI  
COLUMBIA, MISSOURI  
AUGUST, 1916

# UNIVERSITY CALENDAR

Session 1916-17, at Columbia

## Summer Session

1916

June 8.....Thursday, Registration  
 June 9.....Friday, organization of classes  
 August 4.....Friday, examinations

## First Semester

September 14, 15, and 16....Thursday, Friday, and Saturday, entrance examinations  
 September 18, 19, and 20.....Monday, Tuesday, and Wednesday registration  
 September 20.....Wednesday, 11 a. m., opening convocation  
 September 21.....Thursday, 8 a. m., class work in all divisions begins  
 November 1 to December 21...First term, Two-Year Winter Course in Agriculture  
 November 29.....Wednesday, 4 p. m. }

Thanksgiving holidays

to  
 December 4.....Monday, 8 a. m.

December 21.....Thursday, 4 p. m.

1917

to

January 3.....Wednesday, 8 a. m. }

Christmas holidays

January 8 to February 23.....Second term, Two-Year Winter Course in Agriculture

January 24.....Wednesday

to

January 31.....Wednesday

Mid-year examinations

## Second Semester

February 1, 2.....Thursday and Friday, registration, second semester

February 3.....Saturday, 11 a. m., opening convocation

February 5.....Monday, 8 a. m., class work in all divisions begins

February 22.....Thursday, Washington's birthday, holiday

April 4.....Wednesday, 4 p. m. }

to

April 10.....Tuesday, 8 a. m. }

Easter holidays

May 27.....Sunday, Baccalaureate address

May 30.....Wednesday, Commencement Day

May 31.....Thursday

to

June 7.....Thursday

Final examinations

UNIVERSITY OF ALABAMA LIBRARY  
SEP 5 1916

# THE PROFESSION OF MEDICINE

The following pages will be devoted to a brief consideration of certain questions of interest to all who expect to follow the profession of medicine. It is important that all prospective medical students should know the present status of medicine, its advantages and disadvantages as a profession, the opportunities which it offers and the qualifications necessary for success. It is especially important that the general principles underlying sound medical education be clearly understood and that data be made available which will enable those interested to judge of the relative merits of the numerous medical schools in this country.

## ADVANTAGES AND DISADVANTAGES OF MEDICINE AS A PROFESSION

Some of the more obvious disadvantages of medicine as a profession may first be mentioned. Among these are the irregularity of the work, the exposure and danger, the severity of physical and mental strain, and the relatively poor remuneration in comparison with the necessary skill and education. It should be clearly understood that competition is severe, for the medical profession (like most others) is overcrowded. Moreover, with the increase of popular knowledge regarding hygiene and preventive medicine, the need for medical service is in some respects diminishing.

As an offset to the foregoing, however, the medical profession has numerous advantages to offer to those properly qualified. In the first place, for those who achieve eminence by reason of unusual ability and thoro training, the financial rewards are great. Every really well-qualified practitioner is reasonably sure of a good income.

Money, however, is by no means the chief attraction which the profession of medicine has to offer. There is a fascination about the work which is difficult to explain, but which is nevertheless characteristic. Successful practitioners enjoy their work, in spite of hardships and difficulties. Moreover, even in this materialistic age, the philanthropic aspect of the practice of medicine appeals strongly to many. From this point of view, no profession offers greater opportunity for public and private service.

Another phase of medical work, which to many is more attractive than the ordinary practice, is that of teaching and investigation in the various medical sciences. There is at present a strong de-

mand, which is likely to continue, for well-trained men who will devote themselves to anatomy, physiology, pathology, and other branches of medical science. While not so remunerative as the practice of medicine, positions in these and similar branches offer good salaries and an attractive career to those whose tastes and talents incline toward teaching and research.

Finally, so far as competition is concerned, there is no question that the medical profession is overcrowded, but it is *overcrowded with incompetents*. It is true that our leading physicians rank among the best in the world. But on the other hand, owing to the low standards of medical education which have prevailed during the past, it must be confessed that the rank and file of medical practitioners average very low in efficiency. Nowhere is it more emphatically true that "there's plenty of room at the top." No man of reasonable ability with thoro collegiate and professional training need fear the competition. And as the general public is learning to discriminate more carefully, the demand for well-qualified physicians grows stronger. It is therefore exceedingly important for the prospective medical student to consider carefully the qualifications necessary for success in this profession, in order that he may prepare himself accordingly.

### PREMEDICAL EDUCATION

For success in any applied science, two things are necessary: first, to master the science; and second, to learn how to apply it. To master the difficult science of modern medicine, it is absolutely necessary to have a thoro preliminary scientific training.

The amount and character of the necessary preliminary training for medicine is a theme which has been much discussed in recent years. While there are still different views concerning details, there is with reference to the essential points a general consensus of opinion among those entitled to speak with authority in this matter. The first point which should be emphasized is that a *high-school education alone is insufficient*, especially in science, to prepare a student for the difficult medical curriculum of today. The necessity for collegiate work preliminary to medicine is so important and so clearly recognized that it is now required by law in ten states, including Minnesota, Iowa, North and South Dakota, Kansas, Indiana, Connecticut, Colorado, Utah and Vermont.

In these states, in order to be admitted to examination for license to practice, one must show that he took at least one or two years of collegiate work, in addition to the equivalent of a four years' high school course, before entering a medical school. Before the time when those now entering medicine will be graduated, this legal requirement will doubtless be established in many other states.



Students should therefore beware of entering medicine without preliminary collegiate work.

While it is generally recognized that at least one or two years of preliminary collegiate work are necessary, few will urge, as a general requirement, the completion of four years of college work before entering medicine. Indeed it is probable that as a general rule this is an unnecessary expense of time and money, and postpones unduly the age at which practice begins.

Taking all things into consideration, it is the consensus of opinion that the requirement of two years of collegiate work for entrance best meets present conditions. This, it may be noted, is approximately equivalent to the entrance requirement for medicine in the leading European nations. An admirable solution of the problem of preliminary medical education is found in the "combined curriculum" in arts and medicine, whereby it is possible to secure the A. B. degree and also the M. D. within six years.

As to the character of the collegiate work preparatory to medicine, there is now a general agreement of opinion. The old idea that there exists an ideal collegiate course, classical or otherwise, which prepares for any vocation is now abandoned. The present elective system makes it desirable for one to decide upon his future career as early as possible, and to plan his college course so as to prepare himself for the greatest possible efficiency in his life work.

What subjects, then, should the premedical college course include? First and foremost, it should be so planned as to give a thoro training in biology, especially zoology. Most of the accurate and useful knowledge we have concerning the laws of life is derived from careful study and experimentation upon lower forms of life.

In order to understand the nature and conditions of life, it is therefore further evident that one must have a thoro knowledge of physics and chemistry. As time goes on, biology in general and medicine in particular are based more and more upon the fundamental laws of physics and chemistry. Having laid a good foundation in physics, chemistry, and zoology, the student is prepared for the more specialized biological sciences, anatomy, physiology, and pathology; and these in turn lead up to the technical courses in clinical medicine.

Other sciences valuable for the medical student are botany and experimental psychology. Of mathematics, enough should be taken to facilitate the work in physics and chemistry. In languages, excepting an elementary knowledge of Latin (usually taken in the high school), French and German are most valuable. This is especially true of German, since much of the most important biological and medical work is published in that language.

The advantages of a premedical scientific college course as outlined above are well summarized by the following quotation (from the Journal of the American Medical Association, May 27, 1911):

"As a part of the education which should be preliminary to the study of medicine, courses in physics, chemistry, biology, and modern languages have been especially urged during the last several years by the Council on Medical Education. The importance of the sciences named does not depend so much on the bare knowledge obtained from them as on training the student receives. In the work in these sciences, and particularly in the laboratory work, the student, under able instructors, acquires the ability to think for himself; he develops the scientific spirit; he learns the use of the microscope and becomes acquainted with the methods and value of experimentation. A reading knowledge of French and German is an invaluable aid to the medical knowledge, a large portion of which appears in the languages named. That is the minimum preliminary education which should be insisted upon in this country, not because it is the minimum requirement in every other civilized nation, which is a fact, but because the student really needs that training in order to master the complex courses in the modern medical curriculum and to do his part in solving the intricate problems which now confront the medical world. In the medical course of today the ability of the student to think, to observe and to do research work is very essential. Experience has shown that the needed qualifications are best developed by thoro courses, under expert teachers, in physics, chemistry, biology, and modern languages. These are the reasons for urging those courses as a part of the minimum requirement for admission to the medical schools in this country."

### MEDICAL EDUCATION

Presupposing the preliminary college training as above outlined, the medical education proper may next be considered. What are the subjects included in the medical curriculum, and what facilities are necessary in order that they may be successfully taught? As previously stated, medicine is an applied science. Broadly speaking, therefore, it is necessary first to master the subject matter, the fundamental medical sciences, and then to learn how to apply these in clinical medicine, in the prevention and cure of disease. Medical education therefore falls naturally into two subdivisions, the fundamental work occupying the first two years, and the clinical work the last two (or three, if a hospital year be added). Each of these periods will be considered briefly, following which some data will be cited whereby the relative merits of the various medical schools may be judged.

**Fundamental Medical Education:** The fundamental sciences upon which medicine is directly based may be grouped under three headings. The first of these, the anatomical group, includes those which concern primarily the normal form and structure of the human body. These include gross anatomy (dissection, osteology, neurology, topo-

graphic anatomy, etc.), microscopic anatomy (histology) and developmental anatomy (embryology). The second, or physiological group, includes those studies which concern primarily the normal functions of the living organism. In this group, in addition to physiology in the narrower sense, we may place organic and physiological chemistry, and also pharmacology, which deals with the effects of drugs upon the normal organism. The third group, known as pathology (including bacteriology) deals with the abnormal conditions of construction and function which are associated with disease. Finally, there is the subject of hygiene and preventive medicine, which lies in the borderland between the fundamental sciences previously mentioned, and the succeeding subjects in clinical medicine.

It is impossible within the limits of this bulletin to discuss in detail the requisites for thoro instruction in the fundamental sciences. Those desiring to look into this matter more fully are referred to a work entitled *A Model Medical Curriculum*, a report of a committee of one hundred leading educators, issued by the Council on Medical Education of the American Medical Association, 535 Dearborn Ave., Chicago, Ill.

It may be noted briefly that the old-fashioned didactic method of teaching by lectures and recitations from books has been completely revolutionized and replaced by the laboratory method, whereby the student directly observes and studies the phenomena for himself. The laboratory method of instruction requires for success two essential factors. First and most important, the teachers in the various laboratory subjects must be thoroly trained specialists, who are paid salaries to devote their entire time to this work, and are not allowed to practice medicine. They should moreover be active investigators whose enthusiasm will be an inspiration to their students. The second factor includes the facilities, buildings, equipment, and materials for thoro work in each of the laboratories for the various fundamental medical sciences. These two factors, the full-time, thoroly trained teachers and the numerous well-equipped laboratories are so costly as to be out of the reach of most medical schools, but they are necessary in order to obtain the thoro laboratory instruction which is essential in modern medical education.

Another necessity, the importance of which is becoming more clearly recognized, is a good medical library. This should include several thousand well-chosen volumes for reference, including files of one hundred or more of the leading medical periodicals of the world. A good medical library is also very expensive, but is necessary for the best work in instruction, and absolutely essential for research.

**Clinical Medical Education:** When the student has completed the first two years of the curriculum and has mastered the fundamental medical sciences, he is familiar with the structure and functions of the human body, both normal and abnormal, and is ready to learn how to

apply these principles at the bedside for the alleviation and cure of disease. This final period of medical education is designated clinical medicine. It includes two broad groups, internal medicine and surgery, each with numerous subdivisions. Here also lack of space prevents a discussion of each of the numerous special branches, for a full consideration of which the reader may consult the work *A Model Medical Curriculum* previously referred to. In passing, however, it may be remarked that for successful clinical teaching the essentials are very similar to those already stated for the laboratory sciences. The teacher should be skilled and experienced, each a recognized authority in his particular line. Here also it is highly desirable that salaries should be paid so that the teacher's whole time may be devoted to instruction and investigation, tho very few schools are financially able to carry out this policy. The laboratory of the clinical work is the hospital, and it is essential for successful clinical work that each school should own or absolutely control the clinical facilities in a large hospital with a sufficient number of beds in each of the various clinical branches. Certain clinical laboratories must also be provided.

On account of the heavy expenses involved in providing salaried teachers, laboratory and hospital facilities, it is axiomatic that no school can depend solely upon students' fees for support. Private endowment or state support on a liberal scale is essential to provide medical education fully up to modern standards.

The minimum facilities considered absolutely necessary in order that a medical college may be able to give a satisfactory training up to modern standards in both fundamental and clinical subjects are, according to Council on Medical Education of the American Medical Association, as follows:

**Essentials of An Acceptable Medical College:**

1. Strict enforcement of all standards and requirements, the college itself to be held responsible for any instances where they are not forced.

2. A requirement for admission of at least a 4-year high school education superimposed on eight years of grammar school work, as defined by the College Entrance Examination Board.

3. Beginning January 1, 1918, the minimum requirement for admission should be enlarged to include at least two years of work in a college of arts and science approved by the Council.

4. A requirement that students be in actual attendance in the college within the first week of each annual session and thereafter.

5. That actual attendance at classes be insisted on except for good cause, such as for sickness, and that no credit be given under any circumstances for less than eighty per cent of attendance on each course.



6. That advanced standing be granted only to students of other acceptable colleges and that in granting advanced standing there shall be no discrimination against the college's full-course students.

7. Careful and intelligent supervision of an entire school by a dean or other executive officer who holds, and has sufficient authority to carry out, fair ideals of medical education as interpreted by modern demands.

8. A good system of records showing conveniently the credentials, attendance, grades, and accounts of the students.

9. A fully-graded course covering four years of at least thirty-two weeks each, exclusive of holidays, and at least 30 hours a week of actual work; this course should be clearly set forth in a carefully prepared and printed schedule of lectures and classes.

10. Two years of work consisting largely of laboratory work in thoroly equipped laboratories in anatomy, histology, embryology, physiology, chemistry (inorganic, organic and physiologic), bacteriology, pathology, pharmacology, therapeutics, and clinical diagnosis.

11. Two years of clinical work largely in hospitals and dispensaries, with thoro courses in internal medicine (including physical diagnosis, pediatrics, nervous and mental diseases, surgery (including surgical anatomy and operative surgery on the cadaver), obstetrics, gynecology, laryngology, rhinology, ophthalmology, otology, dermatology, hygiene, and medical jurisprudence.

12. As soon as conditions warrant, a fifth undergraduate year should be required which should be spent by the student as an interne in an approved hospital.

13. At least six expert, thoroly trained professors in the laboratory branches, salaried so that they may devote their entire time to instruction and to that research without which they cannot well keep up with the rapid progress being made in their subjects. These professors should have a definite responsibility in the conduct of the college, and their first and chief interest should be in the training of the medical students. There should also be a sufficient number of assistants in each department to look after the less important details. A suggested assignment of these instructors is (a) professor of anatomy, (b) professor of physiology, (c) professor of pathology and bacteriology, and (d) professor of physiologic chemistry and pharmacology. The other two might be associate or assistant professors and assigned one to the laboratory course in histology and embryology under the professor of anatomy and the other to the department of pathology and bacteriology.

14. The medical teaching should be of at least the same degree of excellence as obtains in our recognized liberal art colleges and technical schools.

15. The faculty should be thoroly organized and, with a few allowable exceptions, should be made up of graduates of institutions recognized as medical colleges and should have had a training in



all departments of medicine. They should be appointed because of their ability as teachers and not because they happen to be on the attending staff of some hospital or for other like reasons.

16. The college should own or entirely control a hospital in order that students may come into close and extended contact with patients under the supervision of the attending staff. The hospital should have a sufficiently large number of patients to permit the student to see and study the common variety of surgical and medical cases as well as a fair number in each of the so-called specialties

17. The college should have easily accessible hospital facilities of not less than 200 patients which can be utilized for clinical teaching (for senior classes of 100 students or less), these patients to represent in fair proportion all departments of medicine.

18. The college should have additional hospital facilities for children's diseases, contagious diseases, and nervous and mental diseases.

19. Facilities for at least six maternity cases for each senior student, who should have actual charge of these cases under the supervision of the attending physician. Careful records of each case should be handed in by the student.

20. Facilities for at least thirty autopsies during each college session which are attended and can be participated in by senior students (for senior classes of 100 students or less).

21. A dispensary, or out-patient department, under the control of the college, the attendance to be a daily average of 60 cases (for senior classes of 100 students or less), the patients to be carefully classified, good histories and records of the patients to be kept and the material to be well used.

22. The college should have a working medical library to include the more modern text and reference books with the Index Medicus and thirty or more leading medical periodicals; the library room should be properly lighted and heated, and easily accessible to students during all or the greater part of the day; it should be equipped with suitable tables and chairs, and have a librarian in charge.

23. A working medical museum having its various anatomic, embryologic, pathologic and other specimens carefully prepared, labeled, and indexed so that any specimen may be easily found and employed for teaching purposes. It is suggested that so far as possible with each pathologic specimen coming from post-mortems there also be kept the record of the post-mortem, the clinical history of the patient on whom the autopsy was held and microscopic slides showing the minute structures of the disease shown in the gross specimen.

24. There should be sufficient dissecting material to enable each student individually to dissect at least the lateral half of the human cadaver; to provide cross-sections and other demonstration material

and to allow of a thoro course for each senior in operative surgery on the cadaver.

25. A supply of such useful auxiliary apparatus as a stereopticon, a reflectoscope, carefully prepared charts, embryologic or other models, manikins, dummies for use in bandaging, a Roentgen-ray, and other apparatus now so generally used in medical teaching.

26. The college should show evidences of thoro organization and of reasonably modern methods in all departments and evidences that the equipment and facilities are being intelligently used in the training of medical students.

27. A clear statement of the college's requirements for admission, tuition, time of attendance on the classes, sessions, courses offered and graduation should be clearly set forth, together with complete classified lists of its matriculants and latest graduating class in regular annual catalogs or announcements.

### CRITERIA FOR JUDGING SCHOOLS

Having in mind the essential elements involved in a thoro pre-medical and medical education, it devolves upon the prospective student to select the school which he will attend. This is a critical problem, and grave mistakes are often made thru lack of knowledge regarding the various schools. With regard to the premedical college work, the problem is less difficult, but it is essential to choose a college well equipped for teaching the fundamental sciences of biology, physics, and chemistry. In general, these are best taught in the stronger universities, such as those in the Association of American Universities.\*

In choosing a school for the medical curriculum proper, the problem is much more complicated. Bearing in mind the essential principles previously outlined, the most important information desirable is indicated in the following questions:

1. As to organization, is it an independent medical school, or an integral (not merely nominal) department of a strong university?

2. What is the amount of the income and expenditure? Is the income dependent solely upon students' fees, or is it supported liberally by endowment or state appropriations?

3. What is the extent and character of the laboratory and clinical facilities, its buildings, equipment, library?

4. What is the character of the faculty? Are the teachers full-time salaried experts, or are they allowed to engage in the private practice of medicine? To what extent are they contributing to the advancement of medical science by original research?

\*This association includes the following universities: California, Catholic University of America, Chicago, Clark, Columbia, Cornell, Harvard, Illinois, Indiana, Iowa, John Hopkins, Kansas, Leland Stanford, Jr., Michigan, Minnesota, Missouri, Nebraska, Pennsylvania, Princeton, Virginia, Wisconsin, and Yale.

5. Do the entrance requirements include a minimum of two years of college work, and are they strictly enforced?

6. What is the character of the curriculum, stress laid upon practical work in laboratory and clinics, opportunity for research, etc.?

7. Are the classes large, or are they small, allowing individual attention to each student?

8. What are the tuition fees and expenses?

9. What is the general standing of the school, its rating by competent and disinterested organizations, and its efficiency as measured by the results of the examination of its graduates before the various state licensing boards?

### WHERE TO FIND INFORMATION

Where can the prospective student find reliable data in answer to the preceding questions? Much can of course be learned from the catalogs of the various schools, but in many cases it must be confessed that the information contained therein is incomplete, and even misleading. It may therefore be of service to those interested in this matter to know where to find reliable data from disinterested sources.

In the first place, a list of the medical schools of the United States together with brief information (furnished, however, by the schools themselves) is published in the chapter on "Professional Schools" in the annual report of the Commissioner of Education, U. S. Bureau, of Education, Department of the Interior, Washington, D. C. A reprint of this chapter is obtainable and is useful for reference.

Similar information, which is more complete to some respects, is published each year during August in the "Educational Number" of the Journal of the American Medical Association (Chicago.).

The Council on Medical Education of the A. M. A. has made a thoro personal inspection and investigation of the various medical schools of the country, and has rated them in three classes: Class "A" colleges are those which are acceptable (66 colleges); class "B" those which need improvement in certain respects, but which are otherwise acceptable (17 colleges); and class "C," those which require a complete reorganization to make them acceptable (13 colleges).

Another basis for judgment is to be found in the membership of the Association of American Medical Colleges, with about 50 schools, including nearly all of the better class. A list of the members is published annually in the Educational Number of the Journal A. M. A. above referred to, or may be obtained from the Secretary, Dr. F. C. Zapffe, 3431 Lexington St., Chicago, Ill.

# THE SCHOOL OF MEDICINE

In the foregoing pages the profession of medicine has been considered with especial reference to the principles underlying sound medical education, and the facilities necessary according to modern standards. Attention is now called to the School of Medicine of the University of Missouri, and to the advantages which it offers in providing facilities for obtaining at low cost both premedical and medical education measuring up to the high standards previously outlined.

**Aim of the School of Medicine:** The aim of the School of Medicine is threefold:

(1) To give a thoro laboratory training in those scientific subjects which are fundamental to medicine and form an indispensable preparation for the clinical work.

(2) To contribute to the advancement of medicine by original investigation in the various sciences upon which modern medicine is based.

(3) To promote the diffusion of medical knowledge among the citizens of the state.

## HISTORICAL STATEMENT

The Medical Department of Kemper College ("McDowell Medical College"), founded in St. Louis in 1840, was the first medical school established west of the Mississippi River. In 1845 this school became the Medical Department of the University of Missouri. In 1855, however, it was discontinued, but was re-established in Columbia in December, 1872. The curriculum was at first only two years in length, but was extended to three years in 1891, and to the full four years in 1899.

Owing to the limited clinical facilities available at present, the last two (clinical) years of the medical curriculum have been temporarily suspended. A plan for the establishment of a general state hospital has been adopted by the University, and the clinical portion of the work will be resumed as soon as it is practicable to establish it with adequate clinical facilities. In the meantime, the first two years of the medical curriculum will be continued at Columbia and still further strengthened.

The School of Medicine has always stood for the highest standards of medical education, and was a pioneer in introducing and developing the laboratory method. Laboratory work in anatomy, chemistry, and microscopy was required of students from the date of re-establishment in 1872. A few years later laboratory work in pathology and in physiology was added, and in 1891 the laboratories of



histology and bacteriology were established. The School of Medicine of the University of Missouri was also one of the first schools to place these fundamental medical sciences in charge of specialists who are not allowed to practice medicine, but devote their time exclusively to teaching and investigation.

**Organization and Support:** As has been previously emphasized, the nature of the organization and support of a medical school is a matter of primary importance. The medical school of the University of Missouri is an integral part of the University, whose total income from all sources is about \$1,125,000 a year. The medical school is supported from this income, about \$50,000 being expended annually for this purpose (including hospital), while less than \$3000 is collected in fees from the medical students.

As a result of this liberal support, it has been possible for many years to organize and maintain the medical work on a proper University basis. The course of study is carefully planned, modern laboratory methods being used thruout. The high standards of admission result in small classes (not more than twenty-five in each) prepared for the highest type of work. Women are admitted on equal terms with men.

#### HIGH STANDING OF THE SCHOOL OF MEDICINE

The School of Medicine of the University is rated in the highest class by the Council on Medical Education of the American Medical Association. It is also a member of the Association of American Medical Colleges. In the report of the Carnegie Foundation published in 1910, the facilities of the School of Medicine of the University of Missouri are summarized (p. 251) as follows: "The medical department occupies a new and well-equipped building, excellently adapted to its purposes. The teaching is in charge of full-time instructors of modern training and ideas. A university hospital of forty-five beds gives the department the advantage of clinical material and connection, even tho the actual instruction is limited to the work of the first two years, a feature of great importance. There is a library supplied with important current periodicals, domestic and foreign."

**Low Cost of Medical Education:** Another advantage is the unusually low cost at which premedical and medical education of the highest type may here be obtained. In order to show what it actually costs, statistics have been collected from both premedical and medical students of the University of Missouri, showing the total expenses for the school year. The approximate average cost per student is indicated for each item.

Tuition at the University of Missouri is free, but students who are nonresidents of Missouri pay a tuition fee of \$12 a semester.



Average cost for	Premedical (1st and 2d yrs. of combined course)	Medical (3rd and 4th yrs. of combined course)
Board .....	\$112	\$112
Room .....	48	48
Library, hospital and incidental fees	24	24
Laboratory fees .....	30	40
Books and stationery .....	20	30
Clothing .....	50	50
Incidentals .....	65	75
Average total .....	\$349	\$379

From the above table it is evident that the average total cost for the school year is about \$349 in the premedical, and \$379 in the medical years. The average is, of course, considerably higher than necessary, due to those who are able to afford many luxuries. The minimum figures, however, show that by economy the cost may easily be reduced \$100 below the total average given above. Thus the total cost for the four years is less than for two years of medicine alone in many of the prominent schools.

**Opportunity of Self-Support:** In the case of students working their way thru (about half of the class) the net cost is even reduced considerably lower. It is therefore evident that by earning at least \$100 more during the summer vacation it is possible for the average student to pay his entire way thru the premedical and medical years. This is actually accomplished by a considerable number of students. Students who desire work should apply to the Employment Bureau, Y. M. C. A., University of Missouri. As a rule, every student should have at least \$100 ahead at the start, and those who come before school opens have the best chance for employment. Board and room may be obtained in the University dormitories and The Commons for about \$3.25 a week, but applications for rooms must be filed early, as the space is limited.

**Rollins Scholarship:** The Rollins Scholarship in the School of Medicine is a prize of \$50 which is awarded by vote of the medical faculty to that member of the first year class (third year of combined curriculum) who has made the best record during the course.

**Medical Society:** For many years the medical students have regularly conducted a medical society which has been very successful. At the monthly meetings the program consists of papers by students, supplemented by talks from faculty members or other visiting guests. Premedical students are eligible to membership.

**Register of Students:** At commencement in June, 1916, the Medical Certificate was awarded to fifteen students. During the session 1915-16 there were enrolled 36 in the first year class, 38 in the second year class, 21 special students of which 17 were in the School for Nurses, a total of 95. The names of these students are published in the general catalog of the University.

### BUILDINGS AND EQUIPMENT

Next to the faculty, among the factors which determine the efficiency, come the buildings and material equipment. The School of Medicine is located upon the same campus with other divisions of the University. Of the various buildings on the campus, a group of three—the Medical Laboratory Building, the Parker Memorial Hospital and the animal house—are devoted primarily to the School of Medicine. These will be described in some detail. Several other buildings are also utilized in part for medical instruction.

**Medical Laboratory Building:** The Medical Laboratory Building is a stone and brick building, 48x150 feet, three stories high. It was especially designed for the medical laboratories, and is well equipped to meet the needs of modern laboratory instruction and research. The following is a brief list of the various rooms and equipment in this building.

The department of anatomy and histology occupies a large dissecting room, well lighted and ventilated, with dissecting tables, students' lockers, display cases for specimens, models; an advanced anatomical laboratory, especially equipped for the study of topographic anatomy, including serial sections thru formalin hardened bodies; histological laboratory, with preparation and store-room in connection, thoroly equipped with lockers, tables, microscopes, microtomes, and other apparatus for instruction and research in microscopic work; lecture room for anatomy and histology, equipped with Auzoux manikin, projection apparatus, charts; museum and study room; with adjacent preparation room, containing a large number of models and specimens in human anatomy; research laboratory; embalming and storage rooms, with an abundance of well-preserved cadavers for the work in dissection.

The department of physiology, physiological chemistry, and pharmacology occupies the following rooms: a large laboratory with adjoining store-room, equipped with tables, lockers, and sets of apparatus for the students in physiology and pharmacology; a blood-pressure room, particularly for mammalian experiments; a research laboratory, thoroly equipped, for advanced students in physiology and pharmacology: research laboratory in physiological chemistry; large students' laboratory with adjacent store-room, thoroly equipped for work in physiological chemistry; animal room; mechanic's shop; lecture room (in common with pathology).

The departments of pathology and bacteriology, occupy a large students' laboratory for bacteriology and pathological histology, well-equipped with lockers, microscopes with oil immersion lenses; a preparation room for bacteriology, with sterilizers, incubators; private laboratory, well-equipped for research work in pathology; room for autopsies and work in gross pathology, including a collection of pathological specimens in glass cases; an animal room and storeroom; office and research laboratory for bacteriology; lecture room (in common with physiology); laboratory room for work of preventive medicine.

**Medical Library:** No medical school of today can be considered well equipped without a good library. The medical library is placed in a room on the upper floor of the Medical Laboratory Building, and is open eight hours daily, except Sunday. It contains 5,752 bound volumes, and a large number of pamphlets. The principal medical works of reference are included and 100 leading medical periodicals of the world are received regularly and placed on file. Complete sets of most of these journals are available. The main University Library also contains many works of interest and value to the medical sciences.

A complete catalog of the books and periodicals in the medical library will be furnished free by the University Librarian upon request. The journals and books in the library will be lent free to any reputable physician of the state. The borrower is required to pay the transportation charges both ways.

Provision is also made for sending out circulating libraries to county medical societies arranged in circuits. For information, address the University Librarian, or Dean of the Faculty of Medicine, University of Missouri, Columbia, Mo.

**Animal House:** The animal house is located near the Medical Laboratory Building. It is a brick structure, well lighted, heated, and ventilated. This building provides excellent facilities for rearing and preserving animals, and for investigations in the various lines of medical science. It is of especial value for the experimental work in physiology, pathology, and bacteriology.

**Other Buildings:** The resources of the Parker Memorial Hospital and the department of physics have been combined to create a very satisfactory and complete X-ray equipment for purposes of diagnostic photographic work, and instruction is now being given in the theory and use of X-ray apparatus and in other fields of medical electrolgy.

In several other buildings on the University campus (chemistry, zoology, etc.), instruction is offered in many lines open to medical students as electives, and of especial service to those taking the combined curriculum in medicine and in arts and science. The gymnasium and athletic grounds are open for the use of all students, and special opportunities are offered to those interested.

## ENTRANCE REQUIREMENTS

The requirements for admission to the School of Medicine include:

(1) Fifteen units of secondary school work, including at least 3 units of English, 1 unit in mathematics, 2 units in one foreign language, the remaining being elective. For further details, see general catalog of the University.

(2) Two years (60 hours' credit) of college work, including French or German, 8 hours; general zoology, 8 hours; general physics, 8 hours; inorganic chemistry, 8 hours; general bacteriology, 3 hours; elective, 25 hours.

All correspondence regarding admission should be addressed to The Registrar, University of Missouri, Columbia, Missouri.

**Advanced Standing:** Every applicant for advanced standing is required to present credentials from an accredited college, and to pass such examinations as may be required to show satisfactory completion of courses equivalent to those for which he seeks credit.

Moreover, the usual entrance requirements to the first year class must be satisfied, and evidence of a good moral character must be presented to the dean of the School of Medicine.

## COMBINED WORK IN ARTS AND MEDICINE

Students who have completed the secondary school work, as above outlined, but not the college work, are advised to enter the College of Arts and Science of the University to secure this work.

By the proper choice of electives in the College of Arts and Science, students may within four years complete the two years' college work required for admission, do the two years' work in medicine, and at the same time meet the requirements for the degree of Bachelor of Arts. Such students are registered during the first two years in the College of Arts and Science only. During the last two years, however, they must register both in the School of Medicine and in the College of Arts and Science and must meet the requirements of both. Students are recommended to elect the subjects required, or which lead up to subjects required in medicine, in approximately the order suggested by the following tabulated statement. The work outlined for the first and second years includes all the college work which is required for entrance to the regular medical curriculum.

The entrance requirement for the combined curriculum outlined above is that specified for the College of Arts and Science, i. e., a high school course equivalent to fifteen units. A student who follows this curriculum will, at the end of four years, have completed the requirements for the A. B. degree. He will also have completed the



**Curriculum Leading to the Degrees of A. B. and M. D. Recommended by  
the Medical Faculty:**

FIRST YEAR	First Semester Hours Credit	Second Semester Hours Credit
English .....	3	3
*German 1a and 2b, or French 1a and 2b .....	5	5
Physics 1a and 2b .....	5	3
*Logic 1b, or Mathematis 8b .....	3	0
*History 1b, or Greek 1b .....	0	5
Physical training, or Military Science .....	1	1
	17	17
SECOND YEAR		
*Zoology 1a and 4b .....	5	5
*Chemistry 4a and 25b .....	5	5
General Bacteriology 3b .....	0	3
*Greek 1a, or History 1a .....	5	0
Elective .....	1	3
	16	16
THIRD YEAR		
Same as first year of regular medical curriculum.		
FOURTH YEAR		
Same as second year of regular medical curriculum		

two years' work in medicine, and will require only two years more (or six years in all) for the M. D. degree. Students who wish to do more than the required amount of premedical collegiate work may extend the time to the amount desired. All students who contemplate taking this work should consult the dean of the faculty of medicine.

The subjects marked with \* fulfill the underclassmen requirements for the College of Arts and Science. When a student presents acceptable advanced credits taking the place of such subjects, electives



may be substituted. The subjects required of all pre-medical students are:

German or French .....	8 hours
Physics .....	8 hours
Zoology .....	8 hours
Chemistry .....	8 hours
General Bacteriology .....	3 hours

See *Entrance Requirements*, page 19.

Pre-medical students should keep in mind the desirability of observing certain sequences when planning the work of the first two years of the combined curriculum. The proper sequences are the following:

*The Physical Group.*

- (1) Elementary Physics, 1a or b.
- (2) Elementary Physics, 2b.
- (3) X-rays and High-frequency Currents, 118a or b.

*The Chemical Group.*

- (1) Elementary Inorganic Chemistry, 4a and b.
- (2) Analytical Chemistry, 25a or b.
- (3) Organic Chemistry, 111.
- (4) Physiological Chemistry, 101a, offered the first semester of the senior medical year.

*The Biological Group.*

- (1) General Zoology, 1a or b.
- (2) Comparative Anatomy of Vertebrates, 4b.
- (3) Embryology of Vertebrates, 101a.
- (4) Gross Anatomy, 102a.
- (5) Normal Histology, 103b.
- (6) Neurology, 104b.
- (7) Experimental Physiology, 103a, offered the first semester of the senior medical year.

*The Bacteriological-Pathological Group.*

- (1) General Bacteriology 3a or 3b.
- (2) Medical Bacteriology 102b, offered the second semester of the junior medical year.

The work above outlined in the regular medical curriculum provides a thoro training in the various subjects usually included in the first two years of medicine. It meets the requirements of the Association of American Medical Colleges, of which this school is a member, and follows closely the ideal courses in the laboratory subjects recommended by the Council on Medical Education of the American Medical Association. The individual courses are described in detail on the following pages.

## MEDICAL CURRICULUM

FIRST YEAR	Semester credits		Total hours		
	1st Sem.	2nd Sem.	Lecture	Laboratory	Total
Organic chemistry .....	3	3	68	85	153
Embryology .....	3	..	17	68	85
Gross Anatomy .....	10	..	34	348	382
Histology .....	..	6	17	170	187
Neurology .....	..	3	17	68	85
Bacteriology .....	..	4	34	85	119
Totals .....	16	16	187	824	1011
SECOND YEAR					
Physiological chemistry .....	4	..	34	85	119
Physiology, 102a .....	2	..	17	42	59
Physiology, 103a .....	6	..	51	127	178
Pharmacology .....	..	4	34	85	119
Pathology .....	3	5	51	238	289
Hygiene .....	..	2	34	..	34
Physical diagnosis .....	..	3	34	42	76
Minor surgery .....	..	2	17	42	59
Totals .....	15	16	272	661	933

## STATEMENT OF COURSES

Courses preceded by a number with the letter *a* attached, thus, 100a, are given the first semester only. Those preceded by a number with the letter *b* attached, thus, 100b, are given the second semester only. Those preceded merely by a number are continuous courses and are given both semesters. The number of hours' credit given for a course for each semester is indicated by the Arabic numerals following the statement of the course. Courses numbered 200 and above are strictly graduate in character.

Schedule of days, hours, and rooms follows the description of courses. Where no schedule is given the hours are to be arranged later by the teacher. All classes in the School of Medicine meet in the Medical Building unless otherwise indicated.

## ANATOMY

102a. **Gross Anatomy.** The study of the gross anatomy of the human body, excepting the central nervous system and the sense organs. For use in the study of osteology, which is correlated with the work in dissection, a complete disarticulated human skeleton is issued to every two students. (10) Mr. CLARK; Mr. BATSON.

103b. **Normal Histology.** The study of microscopic anatomy of the tissues and organs of the human body, and also instruction and practice in the making of histological sections. (6) Mr. JOHNSON; Mr. APPLEBY.

104b. **Neurology.** A study of the gross and microscopic anatomy of the central nervous system and sense organs. (3) Mr. JOHNSON; Mr. CHAPMAN.

105a or b. **Topographic Anatomy.** Elective. Open only to students who have completed the course in gross anatomy, histology and neurology. (2) (a) Mr. JOHNSON; (b) Mr. CLARK.

106b. **Study-room Course in Anatomy.** Elective. Prerequisite course 102a. Dissected parts of the body are preserved and are available for informal study or review. This study may be combined with a study of cross-sections. (2 or 3) Hours to be arranged. Mr. CLARK.

206. **Advanced Anatomy.** Elective. Prerequisites, courses 102a, 103b, or 104b laboratory. Advanced work will be given in any of the special fields of anatomy, the amount and character of which will be varied to suit individual needs. Mr. CLARK; Mr. JOHNSON.

207. **Research.** Problems for original investigation will be assigned in anatomy, histology, or embryology. A reading knowledge of French and German is required. Hours to be arranged. Mr. CLARK Mr. JOHNSON.

## BACTERIOLOGY AND PREVENTIVE MEDICINE

102b. **Medical Bacteriology.** Prerequisite, botany, course 3a or b. Subjects studied include relation of bacteria to disease; the fundamental principles of immunity, serum diagnosis, serum and vaccine therapy. The different diseases are discussed, and the micro-organisms causing them are studied in the laboratory, with animal inoculations and demonstrations. The course includes also the study of the best known diseases caused by protozoa. (4) Mr. RAVENEL; Mr. DUPRAY.

103b. **General Hygiene.** Prerequisite, course 102b. Deals in a more detailed manner with the fundamental principles of public and personal hygiene and with the regulatory measures directed toward the improvement of general health. (2) Mr. RAVENEL.

201. **Advanced Bacteriology.** Elective. Prerequisite, course 102b. Amount and character of work will depend on needs and qualifications of student. The manufacture of autogenous vaccines, the determination of the apsonic index, making and use of various sera, study of

milk and water are among the subjects suggested for study. Hours to be arranged. Mr. RAVENEL; Mr. DUPRAY.

202. **Research.** Elective. Prerequisite, course 102b. Students who are sufficiently prepared will be given problems requiring original investigation in the fields of bacteriology and public health. A reading knowledge of French and German recommended. Hours to be arranged. Mr. RAVENEL; Mr. DUPRAY.

203. **Conduct of Public Health Laboratories.** Elective. Prerequisites, course 102b and 201. Designed for those who expect to take up such work as a profession or for teaching purposes. Graduates in medicine preferred. The collection and shipment of various specimens, their examination, milk, and water problems etc., will be discussed and the practical work carried out in the laboratory. Hours to be arranged. Mr. RAVENEL; Mr. DUPRAY.

## CHEMISTRY

11. **Organic Chemistry.** General survey of the principal classes of organic compounds, such as hydrocarbons, alcohols, phenols, ethers, aldehydes, acids, esters, fats, carbohydrates. Student prepares in the laboratory representatives of the various classes of compounds and studies their reactions. (3) Mr. CALVERT.

For other courses of chemistry, which may be elected, see courses in chemistry, College of Arts and Science.

## CLINICAL MEDICINE AND SURGERY

101b. **Physical Diagnosis.** Lectures, demonstration and practical exercises covering the field of the physical examination of the thorax. Practice in the use of instruments ordinarily used in auscultation and percussion and especially with reference to the recognition of the physical signs of normal processes in the respiratory and circulatory organs. (3) Mr. STINE.

102b. **Minor Surgery.** The lectures on the general principles of surgery include the consideration of asepsis and antisepsis, inflammation, healing of wounds, hemorrhage and sepsis. Material for the demonstration of the minor surgical lesions is obtained from the dispensary. The laboratory periods are devoted to a study of bandaging and the preparation and use of surgical material and dressings. Each student will have twelve lessons on the practical application of bandages, including the general principles in the use of plaster bandages, adhesive dressings, splints, etc. The preparation of dressings and instruments is studied in the hospital. Practical work in preparation for operation and surgical technic is carried out in the animal operating rooms. Co-operation with the bacteriological laboratory makes it possible to emphasize the importance of careful technique by requiring the students to keep a complete bacteriological check on their work. (2) Mr. MYER.

## PATHOLOGY

101. **Pathology and Pathological Anatomy.** A laboratory course, supplemented by lectures and recitations, for the histological study of the general and special manifestations of disease. Each student is supplied with about 300 sections which become his property. The corresponding gross material is afforded by a well-equipped museum and by autopsies. (8) Mr. DOLLEY; Mr. SIMMONS.

201a or b. **Advanced Pathology.** Elective. The amount and character of the work will depend upon the needs and qualifications of the student. In connection, opportunity will be afforded for practical experience in the handling of all kinds of morbid material. Hours to be arranged. Mr. DOLLEY; Mr. SIMMONS.

202. **Research.** Elective. Opportunity is afforded to students sufficiently prepared for original investigation of unsolved problems in the fields of pathology and pathological physiology. A reading knowledge of German is required and one of French is recommended. A seminary is held once a week. Mr. DOLLEY.

203. **Normal and Abnormal Neurocytology.** Elective. The application of the general principles and theories of biology to the nerve cell in health and disease. The work will necessarily consist largely of original investigation and will be adjusted to the training of the student. Hours to be arranged. Mr. DOLLEY.

204a. **Pathological Physiology.** Elective. An experimental course. (2) Mr. DOLLEY; Mr. SIMMONS.

## PHYSIOLOGY AND PHARMACOLOGY

101a. **General Physiological Chemistry.** Prerequisite, organic chemistry, course 111. Physiological chemistry of the carbohydrates, fats, and proteins; of the cell and special tissues; of the blood; of respiration; of secretions and of excretions; a quantitative study of the urine in relation to diet. (4) Mr. GULICK; Mr. BROWN.

102a. **Physiology of Secretion, Alimentary Mechanisms, and Reproduction.** Physiology of secretory processes, digestion, absorption, excretion, respiration, metabolism and energy exchange, heat regulation, and production. (2) Mr. KRUSE; Mr. ROBNETT.

103a. **Experimental Physiology.** Physiology of the circulation, respiration, muscle and nerve; nervous system, and sense organs. (6) Mr. GREENE; Mr. KRUSE.

104a and b. **Advanced Physiological Chemistry.** Elective. A course supplementing and extending course 101a. The preparation and chemistry of the proteins, a quantitative study of the tissues and secretions, of enzymes, of putrefaction and putrefaction products, analysis of typical foods, and the detection of food preservatives and adulterants.



The prosecution of a short investigation and formal report on the same are required. (2 to 4) Mr. GULICK.

105b. **Experimental Pharmacology.** Physiological action of drugs. The experimental method is used thruout, the demonstrations being made on man and lower animals. (4) Mr. GREENE; Mr. KRUSE.

107b. **Toxicology.** Elective. Prerequisite, physiology, course 101a or 105b. (2) or (3) Mr. GULICK.

109b. **Child, Growth and Development.** Elective. Prerequisite, Elementary Physiology course 1a or 1b. (2) Mr. GREENE.

206a. **The Physiology of the Nervous System.** Elective. Mr. GREENE.

208. **Journal Club.** Elective. (1) Mr. GREENE.

209a. **The Physiology and Pharmacology of the Circulatory System.** Elective. (3) Mr. GREENE.

210a and b. **Advanced Physiology.** Elective. Advanced courses in physiology, pharmacology and physiological chemistry. Individual problems will be assigned to students of sufficient preparation. Mr. GREENE; Mr. GULICK.

## ZOOLOGY

101a. **Embryology of Vertebrates.** Foundation of vertebrate embryology. Successive stages in the development of the frog, the chick, and the pig are studied from preparations of entire embryos and from serial sections. These observations are used as a basis of comparison for the study of human embryology. 112 Biology Bldg. (3) Mr. LEFEVRE; Mr. TANNREUTHER.

For comparative anatomy, cytology, and other courses in zoology open to medical students as electives, see announcement under College of Arts and Science.

## ELECTIVES

Courses in botany, psychology, zoology, may be elected by students in the School of Medicine who are prepared to pursue them. See announcement of the College of Arts and Science in the annual catalog. With the consent of the dean, medical students may take any accessory work offered in other departments of the University.

## MEDICAL CERTIFICATE

On completing the work outlined in the regular medical curriculum, the student is awarded a Medical Certificate at the following commencement. This certificate will admit him, with full credit for the first two years of medicine, to the leading medical schools, where abundant clinical facilities are available for the last two years' work. Care should be taken, however, to meet the detailed entrance requirements for the particular school chosen.

There is no disadvantage in thus changing to a new place for the clinical work, for there is a natural break in the medical curriculum at this time. Reason and experience agree that the first two years should be devoted to the fundamental medical sciences. For this work, thoroly equipped laboratories are necessary. The student is unprepared for clinics, which at this time are apt even to constitute a harmful distraction. At the beginning of the third year, however, the medical student enters upon his clinical work, a new phase of the subject with different teachers, whether in the same or a different school.

### GRADUATE WORK IN MEDICAL SCIENCES

Special opportunity is given, and every encouragement is offered, to students who desire to do advanced work in any of the fundamental medical sciences. By a year of graduate work, the Master's Degree (A. M.) may be secured, and in three years the degree of Ph. D. Advanced work of the research type in the fundamental medical sciences is highly desirable as a basis for the most thoro work in clinical medicine. It is especially advantageous, however, for those students who desire to specialize with a view to becoming teachers in any of these branches. As previously mentioned, the demand for such teachers far exceeds the supply, and offers an attractive career which many graduates of this school have followed with success. Fellowships and scholarships are available to those who are qualified for graduate work. For further details, see general catalog or separate announcement of the Graduate School, University of Missouri.

To conduct research work successfully, it is self-evident that the teachers themselves should be active investigators. Such teachers are, moreover, as is proved by experience, those whose interest and enthusiasm for their work is also the source of inspiration for their undergraduate students. From every point of view the encouragement of research work is therefore a matter of highest importance. As substantial evidence of the activity of the medical school of the University of Missouri along this line, the following list of publications from the various laboratories for the present year may be of interest.

### PUBLICATIONS 1915-16

#### 1. *From the Department of Anatomy:*

CLARK, E. R., "*A Study of the Reaction of Mesenchyme Cells in the Tadpole's Tail toward Injected Oil Globules.*" Preliminary report: Proc. Am. Ass. Anat., Anat. Rec. Vol. 10, No. 3, p. 191. Also Anat. Rec. Vol. 10, no. 9. 1916.

CLARK, ELEANOR L., "*Observations on the Lymph-Flow and the Associated Morphological Changes in the Early Superficial Lymphatics of Chick Embryos.*" Amer. Jour. Anat., Vol. 18, No. 3, 1915, p. 399.

JOHNSON, F. P., "*Notes on the Neuromeres of the Brain and Spinal Cord.*" Proc. Am. Ass. Anat., Anat. Rec., Vol. 10, No. 3, 1916, p. 209.

JOHNSON, F. P., "*A Human Embryo of Twenty-Four Pairs of Somites.*" Contributions to Embryology, Carnegie Institution of Washington.

POTTORE, J. L., "*An Experimental Study of Bone Growth in the Dog.*" Proc. Amer. Ass. Anat., Anat. Rec., Vol. 10, No. 3, 1916, p. 234.

2. *From the Department of Pathology:*

BUTLER, E. E., "*The Organic Depression of the Nerve Cell Produced by Prolonged Ether Anesthesia.*" Jour. Med. Research, Vol. 34, 1916.

DOLLEY, D. H., "*The Cytological Analysis of Shock.*" Jour. Med. Research, Vol. 34, 1916.

DOLLEY, D. H., "*The Development of Function and the Consequent Functional Growth of the Purkinje Cell of the Dog.*" In press, Jour. Comp. Neur. Abstract Anat. Record, Vol. 10, No. 3., 1916.

MARTIN, F. A., "*The Early Diagnosis and Treatment of Cancer.*" Univ. Mo. Bull., Med. Series 9.

MUNS, W. E., "*An Unusual Cardiogram.*" Jour. Mo. State Med. Asso., Vol. 13, No. 5.

MUNS, W. E., "*Headache—a Symptom: its Causes, Prevention and Cure.*" Univ. Mo. Bull., Med. Series 11.

MUNS, W. E., "*Blood Pressure and Graphic Vaso-Motor Changes in the Periphery during Ether Anesthesia.*" (In press)

3. *From the Department of Physiology, Physiological Chemistry and Pharmacology.*

GREENE, C. W., "*On some Quantitative Physiological Changes in the Pacific Salmon during the Run to the Spawning Grounds.*" Trans. American Fisheries Society, December 1915.

GREENE, C. W. and PEELER, J. O., "*The Central Action of Digitalis as Tested by the Cardio-Inhibitory Center.*" Jour. Pharm. and Exper. Therap. Vol. 7, p. 591, 1915.

GREENE, C. W. and SUMMERS, W. S., "*The Fat and Lipase Content in the Blood in Relation to Fat Feeding and to Fasting.*" Amer. Jour. Phys. Vol. 40, p. 146, 1916.

4. *From the Department of Preventive Medicine and Bacteriology.*

RAVENEL, MAZYCK P., "*Present Views in Respect to Modes and Periods of Infection in Tuberculosis.*" Jour. Amer. Med. Asso. February 26, 1916, Vol. 46, pp. 613-618.

SPENCE, E. L., "*The Prevention of Malaria.*" Univ. Mo. Bull., Med. Series 10.

## PARKER MEMORIAL HOSPITAL

### Officers

GUY L. NOYES, M. D. .... Superintendent  
FANNIE McLEOD, R. N. .... Principal of the School for Nurses  
NELLE SAPP, R. N. .... Head Nurse

By the gift of Wm. L. Parker, the University has an excellent hospital, which has now been in operation for 15 years. In the words of the donor, the hospital is "for the benefit of the School of Medicine." The building is a handsome, modern structure, on high ground at the west side of the campus.

A surgical amphitheater adjoining the hospital has been provided by the gift of the late Adolphus Busch. The interior has been remodeled recently, and the hospital now possesses a group of most modern and adequate surgical operating rooms.

The Parker Memorial Hospital is owned and operated by the University primarily for the benefit of the University students. It is also open to the sick of Missouri for the treatment of acute and chronic curable diseases. Those who suffer from chronic incurable, or dangerous communicable diseases, are not admitted to the hospital.

Patients are admitted to the hospital at any hour of the day. Those living outside of Columbia should make application in advance for admission, preferably through their family physician, who should send with the application for admission a brief statement concerning the nature of the patient's illness. Application for admission should be addressed to the superintendent of the hospital.

Lectures and demonstrations are given in the hospital for the benefit of the students of medicine and the nurses in training.

**Rates and Terms:** The following rates are for the maintenance of patients who are not students of the University, including bed, board, and general nursing, but not including medical or surgical service:

*General medical and surgical cases.* Single rooms, \$15 a week and upward. Wards, \$10 a week and upward.

*Obstetrical cases,* \$25 a week.

*Special nursing* may be arranged at the regular rates for registered nurses.

*Extra fees* will be charged for medicines, special nursing, dressings and the use of the operating room or its equipment. Fees for maintenance are payable invariably in advance.

Physicians who hold consultation with or give treatment to patients not resident in the hospital, and require therefor the attendance of a nurse or the use of the equipment of the hospital, must pay a minimum fee of \$1 for such privilege.

### THE SCHOOL FOR NURSES

The school for nurses of the University of Missouri was organized in 1901. The school is conducted in connection with the Parker Memorial Hospital.

Pupil nurses receive their training in the hospital and laboratories of the University.



The course of instruction is thoro and familiarizes the pupils with the theory and practice of nursing. The course covers a period of three full years. The first three months of residence in the school are probationary; at the expiration of that time the pupil is regularly enrolled as a member of the school, provided she is found to be acceptable.

Recently the nurses have been established in a residence situated close to the hospital. The house has been rearranged so as to make it especially well adapted as a home for nurses.

**Requirements for Entrance to School for Nurses:** A high school education or its equivalent is required for entrance into the school of nurses. Men are not admitted. Candidates must be between the ages of 20 and 30 years and submit an acceptable statement concerning general health, civil state, and other things. Blank forms for this statement will be furnished upon application.

A special announcement giving detailed information concerning the school for nurses will be sent in response to requests for the same, addressed to the Principal of School for Nurses, Parker Memorial Hospital, University of Missouri, Columbia, Missouri.

### PRELIMINARY COURSE FOR NURSES

This course of studies, given in the first semester, is intended primarily for the entering class of students in the regular school for nurses but is open for such other students as can satisfy the requirements for entrance, whether they propose to complete their study of nursing in the University or not.

Provision is made especially for such student nurses as may be recommended for admission to the course by the superintendents of schools for nurses. With such students the purpose is to give them the advantages of the course and after its completion to have them return to the schools from which they came, for the further study of nursing.

Upon the satisfactory completion of the course, arrangement can be made for the admission to other first-class schools for nurses of such students as do not immediately enter the curriculum of the school for nurses at the University.

Graduate nurses in good standing are admitted to the course and are allowed to do the work in part or in whole.

**Entrance Requirements for Preliminary Course:** All candidates for entrance must submit satisfactory evidence of fitness for entering the course as set down in the regular application blank furnished upon request. The candidate must further present evidence of having graduated from a grammar school or its equivalent. Men will not be admitted to the course.

**Expenses:** No entrance, tuition, or laboratory fees will be charged for this course.



The cost for the necessary textbooks will be about \$10.

Students in the preliminary course will not live in the Nurses' Home, but will be required to engage board and room in houses approved by the principal of the school. They will also be required to conform to all the regulations established by the same authority concerning hours for study, recreation, etc.

Board and room may be obtained in Columbia at very reasonable rates.

**Studies of the Preliminary Course:**

Anatomy	Fundamental principles and practice of nursing
Physiology	Materia medica and weights and measures
Bacteriology	Preventive medicine
Dietetics	Voice training and reading
Practical handcraft	Physical training

For further information concerning the preliminary course, address the Principal, School for Nurses, University of Missouri, Columbia, Missouri.

## FACULTY OF THE SCHOOL OF MEDICINE

ALBERT ROSS HILL, A. B., Ph. D., LL. D.,

*President of the University.*

GUY LINCOLN NOYES, M. D.

*Professor in the Department of Clinical Medicine and Surgery,  
Superintendent of Parker Memorial Hospital, Acting Dean of  
the Faculty.*

SIDNEY CALVERT, B. S., A. M.,

*Professor of Organic Chemistry.*

ELIOT ROUND CLARK, A. B., M. D.,

*Professor of Anatomy.*

DAVID HOUGH DOLLEY, A. B., A. M., M. D.,

*Professor of Pathology.*

CHARLES WILSON GREENE, A. B., A. M., Ph. D.,

*Professor of Physiology.*

GEORGE LEFEVRE, A. B., Ph. D.,

*Professor of Zoology.*

WOODSON MOSS, M. D., LL. D.,

*Professor in the Department of Clinical Medicine and Surgery.*

- MAX WASHINGTON MYER, A. B., M. D.,  
*Professor in the Department of Clinical Medicine and Surgery.*
- MAZYŃCK PORCHER RAVENEL, M. D.,  
*Professor of Medical Bacteriology and Preventive Medicine, Director of the Public Health Laboratory.*
- FRANKLIN PARADISE JOHNSON, A. B., A. M., Ph. D.,  
*Associate Professor of Anatomy.*
- DAN GISH STINE, A. B., M. D.,  
*Associate Professor in the Department of Clinical Medicine and Surgery.*
- ADDISON GULICK, A. B., A. M., Ph. D.,  
*Assistant Professor of Physiology.*
- MARTIN DUPRAY, B. S., M. S.,  
*Instructor in Bacteriology and Preventive Medicine.*
- THEOPHILE KARL THEODORE KRUSE, A. B., A. M.,  
*Instructor in Physiology.*
- RALPH RAYBURN SIMMONS, A. B., A. M., M. D.,  
*Instructor in Pathology.*
- GEORGE WASHINGTON TANNREUTHER, A. B., A. M., Ph. D.,  
*Instructor in Zoology.*
- JOHN ISAAC APPLEBY, A. B.,  
*Assistant in Anatomy.*
- OSCAR VIVIAN BATSON, A. B.,  
*Assistant in Anatomy.*
- EGBERT EUGENE BROWN, A. B.,  
*Assistant in Physiology.*
- WARREN BROWNING CHAPMAN, A. B.,  
*Assistant in Anatomy.*
- LUTHER COCHRAN DAVIS, A. B.,  
*Assistant in Bacteriology.*
- DUDLEY ROBNETT, Jr., A. B.,  
*Assistant in Physiology.*
- FANNIE MARIA McLEOD, R. N.,  
*Principal of the School for Nurses.*
- NELLE FRANCIS SAPP, R. N.,  
*Head Nurse, Parker Memorial Hospital.*
- 

## THE UNIVERSITY OF MISSOURI

The University of Missouri stands at the head of the educational systems of the state. It is one of the oldest institutions in the West.

The University was founded at Columbia in 1839 and instruction in academic work was begun in 1841. Few schools in the United

States have made the advancement that Missouri has made during the last twenty years. In 1897 the enrollment was only 805 and in the session of 1915-16 it was more than 4349. The increased enrollment is but indicative of the development of the school in educational efficiency.

The work of the University is now carried on in the following schools and colleges:

- College of Arts and Science
- College of Agriculture
- School of Education
- School of Law
- School of Medicine
- School of Engineering
- School of Mines and Metallurgy
- School of Journalism
- School of Commerce and Administration
- Graduate School
- Extension Division

All of these divisions are at Columbia with the exception of the School of Mines and Metallurgy, which is located at Rolla. In addition emphasis is given particular lines of work by the establishment of minor divisions, the chief of which are the Agricultural Experiment Station, the Engineering Experiment Station, and the Missouri State Military School.

The fundamental aim of the University is the development of the highest and most efficient type of citizen. The school is supported by the state and endeavors to return to the state practical service. Of later years the University has endeavored to go beyond the campus in its influence on the welfare of the people of Missouri. Extension courses, experiment farms, and free literature on practical subjects are some of the methods adopted. The various extension courses have proven highly satisfactory and have rendered real service to people of the state who previously benefited only indirectly from the University.

The University is located at Columbia, a town situated half way between St. Louis and Kansas City near the center of the state. It is reached by the Wabash, and the Missouri, Kansas and Texas Railways. Columbia is a progressive and prosperous town having doubled its population in the last few years. It has nearly twenty miles of paved streets.

The University grounds cover more than 800 acres. The main divisions are in the west campus, the east campus, the athletic fields, and the University farm.

The following University buildings are located at Columbia: Academic Hall; Laws Observatory; separate buildings for chemistry, physics, biology, commerce and geology, engineering, manual arts, law; two power houses; Library Building; Medical Laboratory Building; Parker Memorial Hospital; Agricultural Building; Horticultural Build-

ing; Schweitzer Hall for agricultural chemistry; green houses; Live Stock Judging, Poultry, Dairy, Farm Machinery, and Veterinary Buildings; the University farm barns and buildings; Switzler Hall for the School of Journalism; Gordon Hotel Building for home economics; Benton and Lathrop Halls, dormitories for men; Read Hall and Sampson Hall, dormitories for women; Rothwell Gymnasium; the houses for the President of the University and the Dean of the faculty of Agriculture; the High School and the Elementary School buildings, used for practice schools in the School of Education.

#### FOR FURTHER INFORMATION

For further information concerning the School of Medicine, address  
DEAN, FACULTY OF MEDICINE,  
UNIVERSITY OF MISSOURI,  
COLUMBIA, MISSOURI.

Full information regarding the University is given in the catalog, which will be sent on request without charge. For this or special bulletins of the College of Arts and Science, College of Agriculture, School of Education, School of Law, School of Medicine, School of Engineering, School of Journalism, School of Commerce, Extension Division and the Graduate School, write to

THE REGISTRAR,  
UNIVERSITY OF MISSOURI,  
COLUMBIA, MISSOURI.









THE  
UNIVERSITY OF MISSOURI  
BULLETIN

GENERAL SERIES

EDITED BY  
H. H. KINYON

*University Publisher*

The General Series of The University of Missouri Bulletin consists of the announcements of the various colleges and schools which make up the University. These announcements will be sent free upon request to the Dean of the University Faculty, Columbia, Missouri.

Published by  
UNIVERSITY OF MISSOURI  
COLUMBIA, MISSOURI

The University of Missouri Bulletin—issued  
three times monthly; entered as second class  
matter at the postoffice, Columbia, Missouri.

3500



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1917/18

# THE UNIVERSITY OF MISSOURI BULLETIN

VOLUME 18 NUMBER 18

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GENERAL SERIES

1917, NO. 11

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## SCHOOL OF MEDICINE

ANNOUNCEMENT 1917-1918

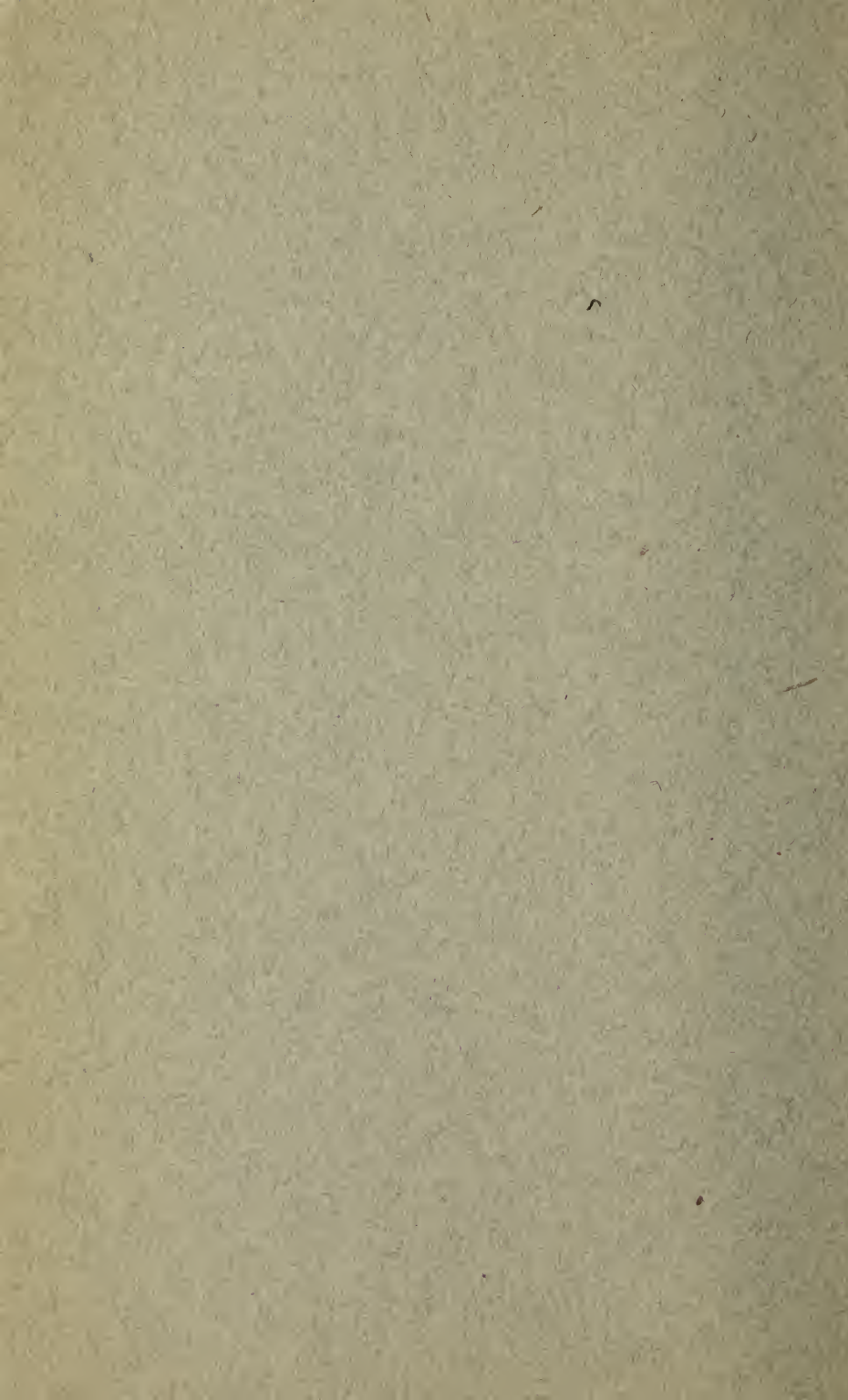


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ISSUED THREE TIMES MONTHLY; ENTERED AS SECOND-CLASS MATTER  
AT THE POSTOFFICE AT COLUMBIA, MISSOURI—1000

JULY 13, 1917





THE UNIVERSITY OF MISSOURI BULLETIN

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# UNIVERSITY CALENDAR

## Session at Columbia

### Summer Session

1917

June 7 .....Thursday, registration.  
 June 8 .....Friday, organization of classes.  
 June 9 .....Saturday, regular class work begins.  
 August 3 .....Friday, examinations.

### First Semester

September 13, 14, and 15 Thursday, Friday and Saturday, entrance examinations.  
 September 17, 18, and 19 Monday, Tuesday and Wednesday, registration.  
 September 19 .....Wednesday, 11, A. M., opening convocation.  
 September 20 .....Thursday, 8 A. M., class work in all divisions begins.  
 October 31 .....Wednesday, }  
   to } First term, two-year winter course in agriculture.  
 December 21 .....Friday }  
 November 29 .....Thursday, Thanksgiving Day, holiday.  
 December 21 .....Friday, 4 P. M. }  
   to } Christmas holidays.  
 1918 }  
 January 3 .....Thursday, 8 A. M. }  
 January 2 .....Wednesday }  
   to } Second term, two-year winter course in agriculture.  
 March 1 .....Friday }  
 January 19 .....Saturday }  
   to } Midyear examinations.  
 January 26 .....Saturday }

### Second Semester

January 28 and 29 .....Monday and Tuesday, registration.  
 January 29 .....Tuesday, 11 A. M., opening convocation.  
 January 30 .....Wednesday, 8 A. M., class work in all divisions begins.  
 February 22 .....Friday, Washington's Birthday, holiday.  
 March 27 .....Wednesday, 4 P. M. }  
   to } Easter holidays.  
 April 2 .....Tuesday, 8 A. M. }  
 May 25 .....Saturday }  
   to } Final examinations.  
 June 1 .....Saturday }  
 June 2 .....Sunday, Baccalaureate address.  
 June 5 .....Wednesday, Commencement Day.

# THE PROFESSION OF MEDICINE

The following pages will be devoted to a brief consideration of certain questions of interest to all who expect to follow the profession of medicine. It is important that all prospective medical students should know the present status of medicine, its advantages and disadvantages as a profession, the opportunities which it offers and the qualifications necessary for success. It is especially important that the general principles underlying sound medical education be clearly understood and that data be made available which will enable those interested to judge of the relative merits of the numerous medical schools in this country.

## ADVANTAGES AND DISADVANTAGES OF MEDICINE AS A PROFESSION

Some of the more obvious disadvantages of medicine as a profession may first be mentioned. Among these are the irregularity of the work, the exposure and danger, the severity of physical and mental strain, and the relatively poor remuneration in comparison with the necessary skill and education. It should be clearly understood that competition is severe, for the medical profession (like most others) is overcrowded. Moreover, with the increase of popular knowledge regarding hygiene and preventive medicine, the need for medical service is in some respects diminishing.

As an offset to the foregoing, however, the medical profession has numerous advantages to offer to those properly qualified. In the first place, for those who achieve eminence by reason of unusual ability and thoro training, the financial rewards are great. Every really well qualified practitioner is reasonably sure of a good income.

Money, however, is by no means the chief attraction which the profession of medicine has to offer. There is a fascination about the work which is difficult to explain, but which is nevertheless characteristic. Successful practitioners enjoy their work, in spite of hardships and difficulties. Moreover, even in this materialistic age, the philanthropic aspect of the practice of medicine appeals strongly to many. From this point of view, no profession offers greater opportunity for public and private service.

Another phase of medical work, which to many is more attractive than the ordinary practice, is that of teaching and investigation in the various medical sciences. There is at present a strong demand, which is likely to continue, for well-trained men who will devote them-

selves to anatomy, physiology, pathology, and other branches of medical science. While not so remunerative as the practice of medicine, positions in these and similar branches offer good salaries and an attractive career to those whose tastes and talents incline toward teaching and research.

Finally, so far as competition is concerned, there is no question that the medical profession is overcrowded, but it is *overcrowded with incompetents*. It is true that our leading physicians rank among the best in the world. But on the other hand, owing to the low standards of medical education which have prevailed during the past, it must be confessed that the rank and file of medical practitioners average very low in efficiency. Nowhere is it more emphatically true that "there's plenty of room at the top." No man of reasonable ability with thoro collegiate and professional training need fear the competition. And as the general public is learning to discriminate more carefully, the demand for well qualified physicians grows stronger. It is therefore exceedingly important for the prospective medical student to consider carefully the qualifications necessary for success in this profession, in order that he may prepare himself accordingly.

### PREMEDICAL EDUCATION

For success in any applied science, two things are necessary: first, to master the science; and second, to learn how to apply it. To master the difficult science of modern medicine, it is absolutely necessary to have a thoro preliminary scientific training.

The amount and character of the necessary preliminary training for medicine is a theme which has been much discussed in recent years. While there are still different views concerning details, there is with reference to the essentials points a general consensus of opinion among those entitled to speak with authority in this matter. The first point which should be emphasized is that a *high-school education alone is insufficient*, especially in science, to prepare a student for the difficult medical curriculum of today. The necessity for collegiate work preliminary to medicine is so important and so clearly recognized that it is now required by law in many states.

In these states, in order to be admitted to examination for license to practice, one must show that he took at least one or two years of collegiate work, in addition to the equivalent of a four years' high school course, before entering a medical school. Before the time when those now entering medicine will be graduated, this legal requirement will doubtless be established in many other states. Students should therefore beware of entering medicine without preliminary collegiate work.

While it is generally recognized that at least one or two years of preliminary collegiate work are necessary, few will urge, as a general requirement, the completion of four years of college work before entering medicine. Indeed it is probable that as a general rule this is



an unnecessary expense of time and money, and postpones unduly the age at which practice begins.

Taking all things into consideration, it is the consensus of opinion that the requirement of two years of collegiate work for entrance best meets present conditions. This, it may be noted, is approximately equivalent to the entrance requirement for medicine in the leading European nations. An admirable solution of the problem of preliminary medical education is found in the "combined curriculum" in arts and medicine, whereby it is possible to secure the A. B. degree and also the M. D. within six years.

As to the character of the collegiate work preparatory to medicine, there is now a general agreement of opinion. The old idea that there exists an ideal collegiate course, classical or otherwise, which prepares for any vocation is now abandoned. The present elective system makes it desirable for one to decide upon his future career as early as possible, and to plan his college course so as to prepare himself for the greatest possible efficiency in his life work.

What subjects, then, should the premedical college course include? First and foremost, it should be so planned as to give a thoro training in biology, especially zoology. Most of the accurate and useful knowledge we have concerning the laws of life is derived from careful study and experimentation upon lower forms of life.

In order to understand the nature and conditions of life, it is therefore further evident that one must have a thoro knowledge of physics and chemistry. As time goes on, biology in general and medicine in particular are based more and more upon the fundamental laws of physics and chemistry. Having laid a good foundation in physics, chemistry, and zoology, the student is prepared for the more specialized biological sciences, anatomy, physiology, and pathology; and these in turn lead up to the technical courses in clinical medicine.

Other sciences valuable for the medical student are botany and experimental psychology. Of mathematics, enough should be taken to facilitate the work in physics and chemistry. In languages, excepting an elementary knowledge of Latin (usually taken in the high school), French and German are most valuable. This is especially true of German, since much of the most important biological and medical work is published in that language.

The advantages of a premedical scientific college course as outlined above are well summarized by the following quotation (from the Journal of the American Medical Association, May 27, 1911): "As a part of the education which should be preliminary to the study of medicine, courses in physics, chemistry, biology, and modern languages have been especially urged during the last several years by the Council on Medical Education. The importance of the sciences named does not depend so much on the bare knowledge obtained from them as on training the student receives. In the work in these sci-

ences, and particularly in the laboratory work, the student, under able instructors, acquires the ability to think for himself; he develops the scientific spirit; he learns the use of the microscope and become acquainted with the methods and value of experimentation. A reading knowledge of French and German is an invaluable aid to the medical knowledge, a large portion of which appears in the languages named. That is the minimum preliminary education which should be insisted upon in this country, not because it is the minimum requirement in every other civilized nation, which is a fact, but because the student really needs that training in order to master the complex courses in the modern medical curriculum and to do his part in solving the intricate problems which now confront the medical world. In the medical course of today the ability of the student to think, to observe and to do research work is very essential. Experience has shown that the needed qualifications are best developed by thoro courses, under expert teachers, in physics, chemistry, biology, and modern languages. These are the reasons for urging those courses as a part of the minimum requirement for admission to the medical schools in this country."

### MEDICAL EDUCATION

Presupposing the preliminary college training as above outlined, the medical education proper may next be considered. What are the subjects included in the medical curriculum, and what facilities are necessary in order that they may be successfully taught? As previously stated, medicine is an applied science. Broadly speaking, therefore, it is necessary first to master the subject matter, the fundamental medical sciences, and then to learn how to apply these in clinical medicine, in the prevention and cure of disease. Medical education therefore falls naturally into two subdivisions, the fundamental work occupying the first two years, and the clinical work the last two (or three, if a hospital year be added). Each of these periods will be considered briefly, following which some data will be cited whereby the relative merits of the various medical schools may be judged.

**Fundamental Medical Education:** The fundamental sciences upon which medicine is directly based may be grouped under three headings. The first of these, the anatomical group, includes those which concern primarily the normal form and structure of the human body. These include gross anatomy (dissection, osteology, neurology, topographic anatomy, etc.), microscopic anatomy (histology) and developmental anatomy (embryology). The second, or physiological group, includes those studies which concern primarily the normal functions of the living organism. In this group, in addition to physiology in the narrower sense, we may place organic and physiological chemistry, and also pharmacology, which deals with the effects of drugs upon the normal organism. The third group, known as pathology (includ-

ing bacteriology) deals with the abnormal conditions of construction and function which are associated with disease. Finally, there is the subject of hygiene and preventive medicine, which lies in the borderland between the fundamental sciences previously mentioned, and the succeeding subjects in clinical medicine.

It is impossible within the limits of this bulletin to discuss in detail the requisites for thoro instruction in the fundamental sciences. Those desiring to look into this matter more fully are referred to a work entitled *A Model Medical Curriculum*, a report of a committee of one hundred leading educators, issued by the Council on Medical Education of the American Medical Association, 535 Dearborn Ave., Chicago, Ill.

It may be noted briefly that the old-fashioned didactic method of teaching by lectures and recitations from books has been completely revolutionized and replaced by the laboratory method, whereby the student directly observes and studies the phenomena for himself. The laboratory method of instruction requires for success two essential factors. First and most important, the teachers in the various laboratory subjects must be thoroly trained specialists, who are paid salaries to devote their entire time to this work, and are not allowed to practice medicine. They should moreover be active investigators whose enthusiasm will be an inspiration to their students. The second factor includes the facilities, buildings, equipment, and materials for thoro work in each of the laboratories for the various fundamental medical sciences. These two factors, the full-time, thoroly trained teachers and the numerous well-equipped laboratories are so costly as to be out of the reach of most medical schools, but they are necessary in order to obtain the thoro laboratory instruction which is essential in modern medical education.

Another necessity, the importance of which is becoming more clearly recognized, is a good medical library. This should include several thousand well chosen volumes for reference, including files of one hundred or more of the leading medical periodicals of the world. A good medical library is also very expensive, but is necessary for the best work in instruction, and absolutely essential for research.

## CRITERIA FOR JUDGING SCHOOLS

Having in mind the essential elements involved in a thoro pre-medical and medical education, it devolves upon the prospective student to select the school which he will attend. This is a critical problem, and grave mistakes are often made thru lack of knowledge regarding the various schools. With regard to the premedical college work, the problem is less difficult, but it is essential to choose a college well equipped for teaching the fundamental sciences of biology, physics, and chemistry. In general, these are best taught in the stronger

universities, such as those in the Association of American Universities.\*

In choosing a school for the medical curriculum proper, the problem is much more complicated. Bearing in mind the essential principles previously outlined, the most important information desirable is indicated in the following questions:

1. As to organization, is it an independent medical school, or an integral (not merely nominal) department of a strong university?

2. What is the amount of the income and expenditure? Is the income dependent solely upon students' fees, or is it supported liberally by endowment or state appropriations?

3. What is the extent and character of the laboratory and clinical facilities, its buildings, equipment, library?

4. What is the character of the faculty? Are the teachers full-time salaried experts, or are they allowed to engage in the private practice of medicine? To what extent are they contributing to the advancement of medical science by original research?

5. Do the entrance requirements include a minimum of two years of college work, and are they strictly enforced?

6. What is the character of the curriculum, stress laid upon practical work in laboratory and clinics, opportunity for research, etc.?

7. Are the classes large, or are they small, allowing individual attention to each student?

8. What are the tuition fees and expenses?

9. What is the general standing of the school, its rating by competent and disinterested organizations, and its efficiency as measured by the results of the examination of its graduates before the various state licensing boards?

### WHERE TO FIND INFORMATION

Where can the prospective student find reliable data in answer to the preceding questions? Much can of course be learned from the catalogs of the various schools, but in many cases it must be confessed that the information contained therein is incomplete, and even misleading. It may therefore be of service to those interested in this matter to know where to find reliable data from disinterested sources.

In the first place, a list of the medical schools of the United States together with brief information (furnished, however, by the schools themselves) is published in the chapter on "Professional Schools" in the annual report of the Commissioner of Education, U. S. Bureau of Education, Department of the Interior, Washington, D. C. A reprint of this chapter is obtainable and is useful for reference.

\*This association includes the following universities: California, Catholic University of America, Chicago, Clark, Columbia, Cornell, Harvard, Illinois, Indiana, Iowa, Johns Hopkins, Kansas, Leland Stanford, Jr., Michigan, Minnesota, Missouri, Nebraska, Pennsylvania, Princeton, Virginia, Wisconsin, and Yale.



Similar information, which is more complete in some respects, is published each year during August in the "Educational Number" of the Journal of the American Medical Association (Chicago).

The Council on Medical Education of the A. M. A. has made a thoro personal inspection and investigation of the various medical schools of the country, and has rated them in three classes: Class "A" colleges are those which are acceptable (67 colleges); class "B," those which need improvement in certain respects, but which are otherwise acceptable (15 colleges); and class "C," those which require a complete reorganization to make them acceptable (12 colleges).

Another basis for judgment is to be found in the membership of the Association of American Medical Colleges, with about 50 schools, including nearly all of the better class. A list of the members is published annually in the Educational Number of the Journal A. M. A. above referred to, or may be obtained from the Secretary, Dr. F. C. Zapffe, 3431 Lexington St., Chicago, Ill.



# THE SCHOOL OF MEDICINE

In the foregoing pages the profession of medicine has been considered with especial reference to the principles underlying sound medical education, and the facilities necessary according to modern standards. Attention is now called to the School of Medicine of the University of Missouri, and to the advantages which it offers in providing facilities for obtaining at low cost both premedical and medical education measuring up to the high standards previously outlined.

**Aim of the School of Medicine:** The aim of the School of Medicine is threefold:

(1) To give a thoro laboratory training in those scientific subjects which are fundamental to medicine and form an indispensable preparation for the clinical work.

(2) To contribute to the advancement of medicine by original investigation in the various sciences upon which modern medicine is based.

(3) To promote the diffusion of medical knowledge among the citizens of the state.

## HISTORICAL STATEMENT

The Medical Department of Kemper College ("McDowell Medical College"), founded in St. Louis in 1840, was the first medical school established west of the Mississippi River. In 1845 this school became the Medical Department of the University of Missouri. In 1855, however, it was discontinued, but was re-established in Columbia in December, 1872. The curriculum was at first only two years in length, but was extended to three years in 1891, and to the full four years in 1899.

Owing to the limited clinical facilities available at present, the last two (clinical) years of the medical curriculum have been temporarily suspended. A plan for the establishment of a general state hospital has been adopted by the University, and the clinical portion of the work will be resumed as soon as it is practicable to establish it with adequate clinical facilities. In the meantime, the first two years of the medical curriculum will be continued at Columbia and still further strengthened.

The School of Medicine has always stood for the highest standards of medical education, and was a pioneer in introducing and developing the laboratory method. Laboratory work in anatomy, chemistry, and microscopy was required of students from the date of re-establishment in 1872. A few years later laboratory work in pathology and in physiology was added, and in 1891 the laboratories of histology and bacteriology were established. The School of Medicine of

the University of Missouri was also one of the first schools to place these fundamental medical sciences in charge of specialists who are not allowed to practice medicine, but devote their time exclusively to teaching and investigation.

**Organization and Support:** As has been previously emphasized, the nature of the organization and support of a medical school is a matter of primary importance. The medical school of the University of Missouri is an integral part of the University, whose total income from all sources is about \$1,125,000 a year. The medical school is supported from this income, about \$50,000 being expended annually for this purpose (including hospital), while less than \$3000 is collected in fees from the medical students.

As a result of this liberal support, it has been possible for many years to organize and maintain the medical work on a proper University basis. The course of study is carefully planned, modern laboratory methods being used thruout. The high standards of admission result in small classes (not more than twenty-five in each) prepared for the highest type of work. Women are admitted on equal terms with men.

### HIGH STANDING OF THE SCHOOL OF MEDICINE

The School of Medicine of the University is rated in the highest class by the Council on Medical Education of the American Medical Association. It is also a member of the Association of American Medical Colleges. In the report of the Carnegie Foundation published in 1910, the facilities of the School of Medicine of the University of Missouri are summarized (p. 251) as follows: "The medical department occupies a new and well equipped building, excellently adapted to its purposes. The teaching is in charge of full-time instructors of modern training and ideas. A university hospital of forty-five beds gives the department the advantage of clinical material and connection, even tho the actual instruction is limited to the work of the first two years, a feature of great importance. There is a library supplied with important current periodicals, domestic and foreign."

**Low Cost of Medical Education:** Another advantage is the unusually low cost at which premedical and medical education of the highest type may here be obtained. In order to show what it actually costs, statistics have been collected from both predemical and medical students of the University of Missouri, showing the total expenses for the school year. The approximate average cost per student is indicated for each item.

Tuition at the University of Missouri is free to residents of the state, but a library, hospital and incidental fee of \$12 a semester is

charged. Nonresident students must also pay a tuition fee of \$10 a semester.

Average cost for	Premedical (1st and 2d yrs. of combined course)	Medical (3rd and 4th yrs. of combined course)
Board .....	\$112	\$112
Room .....	48	48
Library, hospital and incidental fees	24	24
Laboratory fees .....	30	40
Books and stationery .....	20	30
Clothing .....	50	50
Incidentals .....	65	75
Average total .....	\$349	\$379

From the above table it is evident that the average total cost for the school year is about \$349 in the premedical, and \$379 in the medical years. The average is, of course, considerably higher than necessary, due to those who are able to afford many luxuries. The minimum figures show that by economy the cost may easily be reduced \$100 below the total average given above. Thus the total cost for the four years is less than for two years of medicine alone in many of the prominent schools.

**Opportunity of Self-Support:** In the case of students working their way thru (about half of the class) the net cost is even reduced considerably lower. It is therefore evident that by earning at least \$100 more during the summer vacation it is possible for the average student to pay his entire way thru the premedical and medical years. This is actually accomplished by a considerable number of students. Students who desire work should apply to the Employment Bureau, Y. M. C. A., University of Missouri. As a rule, every student should have at least \$100 ahead at the start, and those who come before school opens have the best chance for employment. Board and room may be obtained in the University dormitories and The Commons for about \$3.25 a week, but applications for rooms must be filed early, as the space is limited.

**Rollins Scholarship:** The Rollins Scholarship in the School of Medicine is a prize of \$50 which is awarded by vote of the medical faculty to that member of the first year class (third year of combined curriculum) who has made the best record during the course.

**Register of Students:** At commencement in June, 1917, the Medical Certificate was awarded to seventeen students. During the session 1916-17 there were enrolled 47 in the first year class, 32 in the second

year class, a total of 79. The names of these students are published in the general catalog of the University.

## BUILDINGS AND EQUIPMENT

Next to the faculty, among the factors which determine the efficiency, come the buildings and material equipment. The School of Medicine is located upon the same campus with other divisions of the University. Of the various buildings on the campus, a group of three—the Medical Laboratory Building, the Parker Memorial Hospital and the animal house—are devoted primarily to the School of Medicine. These will be described in some detail. Several other buildings are also utilized in part for medical instruction.

**Medical Laboratory Building:** The Medical Laboratory Building is a stone and brick building, 48 x 150 feet, three stories high. It was especially designed for the medical laboratories, and is well equipped to meet the needs of modern laboratory instruction and research. The following is a brief list of the various rooms and equipment in this building.

The department of anatomy and histology occupies a large dissecting room, well lighted and ventilated, with dissecting tables, students' lockers, display cases for specimens, models; an advanced anatomical laboratory, especially equipped for the study of topographic anatomy, including serial sections thru formalin hardened bodies; histological laboratory, with preparation and store-room in connection, thoroly equipped with lockers, tables, microscopes, microtomes, and other apparatus for instruction and research in microscopic work; lecture room for anatomy and histology, equipped with Auzoux manikin, projection apparatus, charts; museum and study room; with adjacent preparation room, containing a large number of models and specimens in human anatomy; research laboratory; embalming and storage rooms, with an abundance of well preserved cadavers for the work in dissection.

The department of physiology, physiological chemistry, and pharmacology occupies the following rooms: a large laboratory with adjoining store-room, equipped with tables, lockers, and sets of apparatus for the students in physiology and pharmacology; a blood-pressure room, particularly for mammalian experiments; a research laboratory, thoroly equipped, for advanced students in physiology and pharmacology; research laboratory in physiological chemistry; large students' laboratory with adjacent store-room, thoroly equipped for work in physiological chemistry; animal room; mechanic's shop; lecture room (in common with pathology).

The departments of pathology and bacteriology, occupy a large students' laboratory for bacteriology and pathological histology, well equipped with lockers, microscopes with oil immersion lenses; a preparation room for bacteriology, with sterilizers, incubators; private



laboratory, well equipped for research work in pathology; room for autopsies and work in gross pathology, including a collection of pathological specimens in glass cases; an animal room and storeroom; office and research laboratory for bacteriology; lecture room (in common with physiology); laboratory room for work of preventive medicine.

**Medical Library:** No medical school of today can be considered well equipped without a good library. The medical library is placed in a room on the upper floor of the Medical Laboratory Building, and is open eight hours daily, except Sunday. It contains 5,752 bound volumes, and a large number of pamphlets. The principal medical works of reference are included and 100 leading medical periodicals of the world are received regularly and placed on file. Complete sets of most of these journals are available. The main University Library also contains many works of interest and value to the medical sciences.

A complete catalog of the books and periodicals in the medical library will be furnished free by the University Librarian upon request. The journals and books in the library will be lent free to any reputable physician of the state. The borrower is required to pay the transportation charges both ways.

Provision is also made for sending out circulating libraries to county medical societies arranged in circuits. For information, address the University Librarian, or Dean of the Faculty of Medicine, University of Missouri, Columbia, Missouri.

**Animal House:** The animal house is located near the Medical Laboratory Building. It is a brick structure, well lighted, heated, and ventilated. This building provides excellent facilities for rearing and preserving animals, and for investigations in the various lines of medical science. It is of especial value for the experimental work in physiology, pathology and bacteriology.

**Other Buildings:** The resources of the Parker Memorial Hospital and the department of physics have been combined to create a very satisfactory and complete X-ray equipment for purposes of diagnostic photographic work and instruction is now being given in the theory and use of X-ray apparatus and in other fields of medical electrology.

In several other buildings on the University campus (chemistry, zoology, etc.), instruction is offered in many lines open to medical students as electives, and of especial service to those taking the combined curriculum in medicine and in arts and science. The gymnasium and athletic grounds are open for the use of all students, and special opportunities are offered to those interested.

### ENTRANCE REQUIREMENTS

The requirements for admission to the School of Medicine include:

(1) Fifteen units, the equivalent of a four years' high school course, including at least 3 units of English, 1 unit in mathematics, 2



units in one foreign language, the remaining being elective. For further details, see general catalog of the University.

(2) Two years (60 hours' credit) of college work, including French or German, 8 hours; general zoology, 8 hours; general physics, 8 hours; inorganic chemistry, 8 hours; general bacteriology, 3 hours; and such other subjects as are included in the undergraduate requirements of the College of Arts and Science of the University of Missouri. See page 119, general catalog of the University.

All correspondence regarding admission should be addressed to The Registrar, University of Missouri, Columbia, Missouri.

**Advanced Standing:** Every applicant for advanced standing is required to present credentials from an accredited college, and to pass such examinations as may be required to show satisfactory completion of courses equivalent to those for which he seeks credit.

Moreover, the usual entrance requirements to the first year class must be satisfied, and evidence of a good moral character must be presented to the dean of the faculty of medicine.

Special students will not be admitted to the school.

### COMBINED WORK IN ARTS AND MEDICINE

Students who have completed the secondary school work, as above outlined, but not the college work, are advised to enter the College of Arts and Science of the University to secure this work.

By the proper choice of electives in the College of Arts and Science, students may within four years complete the two years' college work required for admission, do the two years' work in medicine, and at the same time meet the requirements for the degree of Bachelor of Arts. Such students are registered during the first two years in the College of Arts and Science only. During the last two years, however, they must register both in the School of Medicine and in the College of Arts and Science and must meet the requirements of both. Students are recommended to elect the subjects required, or which lead up to subjects required in medicine, in approximately the order suggested by the following tabulated statement. The work outlined for the first and second years includes all the college work which is required for entrance to the regular medical curriculum.

The entrance requirement for the combined curriculum outlined above is that specified for the College of Arts and Science, i. e., a high school course equivalent to fifteen units. A student who follows this curriculum will, at the end of four years, have completed the requirements for the A. B. degree. He will also have completed the two years' work in medicine, and will require only two years more (or six years in all) for the M. D. degree. Students who wish to do more than the required amount of premedical collegiate work may extend the time to the amount desired. All students who contemplate taking this work should consult the dean of the faculty of medicine.

**Curriculum Leading to the Degrees of A. B. and M. D. Recommended by  
the Medical Faculty:**

FIRST YEAR	First Semester Hours Credit	Second Semester Hours Credit
English .....	3	3
German 1a and 2b, or French 1a and 2b .....	5	5
Physics 1a and 2b .....	5	3
Logic 1a, or Mathematics 1a .....	3	0
History 1b, or Latin 10b or 20b, or Greek 1b ....	0	5
Military Science and Tactics .....	1	1
	<hr/> 17	<hr/> 17
SECOND YEAR		
Zoology 1a and 4b .....	5	5
Chemistry 4a and 25b .....	5	5
General Bacteriology, (Botany 3b) .....	0	3
Greek 1a, or Latin 10a or 20a, or History 1a ....	5	0
Military Science and Tactics .....	1	1
Elective .....	0	2
	<hr/> 16	<hr/> 16
THIRD YEAR		
Same as first year of regular medical curriculum		
FOURTH YEAR		
Same as second year of regular medical curriculum		

Premedical students should keep in mind the desirability of observing certain sequences when planning the work of the first two years of the combined curriculum. The proper sequences are the following:  
*The Physical Group.*

- (1) Elementary Physics, 1a or b.
- (2) Elementary Physics, 2b.
- (3) General Laboratory Physics, 20a and b.
- (4) X-rays and High-frequency Currents, 118a or b.

*The Chemical Group.*

- (1) Elementary Inorganic Chemistry, 4a and b.
- (2) Analytical Chemistry, 25a or b.
- (3) Organic Chemistry, 111.
- (4) Physiological Chemistry, 101a.

*The Biological Group.*

- (1) General Zoology, 1a or b.
- (2) Comparative Anatomy of Vertebrates, 4b.
- (3) Cytology, 103b.
- (4) Protozoology, 105a.
- (5) Parasitology, 106b.
- (6) Embryology of Vertebrates, 101a.
- (7) Gross Anatomy, 102a.
- (8) Normal Histology, 103b.
- (9) Neurology, 104b.
- (10) Experimental Physiology, 103a.

*The Bacteriological-Pathological Group.*

- (1) General Bacteriology, 3a or 3b.
- (2) Medical Bacteriology, 102b.

The work above outlined in the regular medical curriculum provides a thoro training in the various subjects usually included in the first two years of medicine. It meets the requirements of the Association of American Medical Colleges, of which this school is a member, and follows closely the ideal courses in the laboratory subjects recommended by the Council on Medical Education of the American Medical Association. The individual courses are described in detail on the following pages.

**MEDICAL CURRICULUM**

FIRST YEAR	Semester credits		Total hours		
	1st Sem.	2nd Sem.	Lecture	Laboratory	Total
Organic Chemistry .....	3	3	68	85	153
Embryology .....	3	..	17	68	85
Gross Anatomy .....	10	..	34	348	382
Histology .....	..	6	17	170	187
Neurology .....	..	3	17	68	85
Bacteriology .....	..	4	34	85	119
Totals .....	16	16	187	824	1011
SECOND YEAR					
Physiological Chemistry .....	4	..	34	85	119
Physiology, 102a .....	2	..	17	42	59
Physiology, 103a .....	6	..	51	127	178
Pathology .....	3	5	51	238	289
Pharmacology .....	..	4	34	85	119
Hygiene .....	..	2	34	..	34
Physical Diagnosis .....	..	3	34	42	76
Minor Surgery .....	..	2	17	42	59
Totals .....	15	16	272	661	933

### STATEMENT OF COURSES

Courses preceded by a number with the letter *a* attached, thus, 100a, are given the first semester only. Those preceded by a number with the letter *b* attached, thus, 100b, are given the second semester only. Those preceded merely by a number are continuous courses and are given both semesters. The number of hours' credit given for a course for each semester is indicated by the Arabic numerals following the statement of the course. Courses numbered 200 and above are strictly graduate in character.

#### ANATOMY

102a. **Gross Anatomy.** The study of the gross anatomy of the human body, excepting the central nervous system. For use in the study of osteology, which is correlated with the work in dissection, a complete disarticulated human skeleton is issued to every two students. (10). Mr. CLARK; Mr. BLOOMER; Mr. WILLIAMSON.

103b. **Normal Histology.** The study of the microscopic anatomy of the tissues and organs of the human body. (6) Mr. JOHNSON; Mr. APPLEBY.

104b. **Neurology.** A study of the gross and microscopic anatomy of the central nervous system and sense organs. (3) Mr. JOHNSON; Mr. BLOOMER.

105a or b. **Topographic Anatomy.** Elective. Open only to students who have completed the course in gross anatomy, histology and neurology. (2) or (3) (a) Mr. JOHNSON; (b) Mr. CLARK.

106b. **Study-room Course in Anatomy.** Elective. Prerequisite course 102a. Dissected parts of the body are preserved and are available for informal study or review. This study may be combined with a study of cross-sections. (2 or 3) Mr. CLARK.

206a and 207b. **Advanced Anatomy.** Elective. Prerequisites, courses 102a, 103b, or 104b. Advanced work will be given in any of the special fields of anatomy, the amount and character of which will be varied to suit individual needs. Mr. CLARK; Mr. JOHNSON.

208a and 209b. **Research.** Problems for original investigation will be assigned in anatomy, histology, or embryology. A reading knowledge of French and German is required. Mr. CLARK; Mr. JOHNSON.

#### BACTERIOLOGY AND PREVENTIVE MEDICINE

102b. **Medical Bacteriology.** Prerequisite, botany, course 3a or b. Subjects studied include relation of bacteria to disease; the fundamental principles of immunity, serum diagnosis, serum and vaccine therapy. The different diseases are discussed, and the micro-organisms causing them are studied in the laboratory, with animal inoculations and demonstrations. The course includes also the study of the best known diseases caused by protozoa. (4) Mr. RAVENEL; Mr. BRADFORD.

101b. **General Hygiene.** Prerequisite, course 102b. Deals in a more detailed manner with the fundamental principles of public and personal hygiene and with the regulatory measures directed toward the improvement of general health. (2) Mr. RAVENEL.

201. **Advanced Bacteriology.** Elective. Prerequisite, course 102b. Amount and character of work will depend on needs and qualifications of student. The manufacture of autogenous vaccines, the determination of the apsonic index, making and use of various sera, study of milk and water are among the subjects suggested for study. Hours to be arranged. Mr. RAVENEL; Mr. BRADFORD.

202. **Research.** Elective. Prerequisite, course 102b. Students who are sufficiently prepared will be given problems requiring original investigation in the fields of bacteriology and public health. A reading knowledge of French and German recommended. Hours to be arranged. Mr. RAVENEL; Mr. BRADFORD.

203. **Conduct of Public Health Laboratories.** Elective. Prerequisites, course 102b and 201. Designed for those who expect to take up such work as a profession or for teaching purposes. Graduates in medicine preferred. The collection and shipment of various specimens, their examination, milk, and water problems, etc., will be discussed and the practical work carried out in the laboratory. Hours to be arranged. Mr. RAVENEL; Mr. BRADFORD.

## CHEMISTRY

11. **Organic Chemistry.** General survey of the principal classes of organic compounds, such as hydrocarbons, alcohols, phenols, ethers, aldehydes, acids, esters, fats, carbohydrates. Student prepares in the laboratory representatives of the various classes of compounds and studies their reactions. (3) Mr. CALVERT.

For other courses of chemistry, which may be elected, see courses in chemistry, College of Arts and Science.

## CLINICAL MEDICINE AND SURGERY

101b. **Physical Diagnosis.** Lectures, demonstration and practical exercises covering the field of the physical examination of the thorax. Practice in the use of instruments ordinarily used in auscultation and percussion especially with reference to the recognition of the physical signs of normal and disease processes in the respiratory and circulatory organs. (3) Mr. STINE.

102b. **Minor Surgery.** The lectures on the general principles of surgery include the consideration of asepsis and antisepsis, inflammation, healing of wounds, hemorrhage and sepsis. Material for the demonstration of the minor surgical lesions is obtained from the dispensary. The laboratory periods are devoted to a study of bandaging and the preparation and use of surgical material and dressings. Each



student will have twelve lessons on the practical application of bandages, including the general principles in the use of plaster bandages, adhesive dressings, splints, etc. The preparation of dressings and instruments is studied in the hospital. Practical work in preparation for operation and surgical technic is carried out in the animal operating rooms. Co-operation with the bacteriological laboratory makes it possible to emphasize the importance of careful technic by requiring the students to keep a complete bacteriological check on their work. (2) Mr. MYER.

### PATHOLOGY

101. **Pathology and Pathological Anatomy.** A laboratory course, supplemented by lectures and recitations, for the histological study of the general and special manifestations of disease. Each student is supplied with about 300 sections which become his property. The corresponding gross material is afforded by a well equipped museum and by autopsies. (8) Mr. DOLLEY; Mr. SIMMONS.

201a and b. **Advanced Pathology.** Elective. The amount and character of the work will depend upon the needs and qualifications of the student. In connection, opportunity will be afforded for practical experience in the handling of all kinds of morbid material. Hours to be arranged. Mr. DOLLEY; Mr. SIMMONS.

202. **Research.** Elective. Opportunity is afforded to students sufficiently prepared for original investigation of unsolved problems in the fields of pathology and pathological physiology. A reading knowledge of German is required and one of French is recommended. A seminary is held once a week. Mr. DOLLEY.

203. **Normal and Abnormal Neurocytology.** Elective. The application of the general principles and theories of biology to the nerve cell in health and disease. The work will necessarily consist largely of original investigation and will be adjusted to the training of the student. Hours to be arranged. Mr. DOLLEY.

204a. **Pathological Physiology.** Elective. An experimental course. (2) Mr. DOLLEY; Mr. SIMMONS.

### PHYSIOLOGY AND PHARMACOLOGY

101a. **General Physiological Chemistry.** Prerequisite, organic chemistry, course 111 or its equivalent. Physiological chemistry of the carbohydrates, fats, and proteins; of the cell and special tissues; of the blood; of respiration; of secretions and of excretions; a quantitative study of the urine in relation to diet. (4) Mr. GULICK; Mr. JOHNSON.

102a. **Physiology of Secretion, Alimentary Mechanisms, and Reproduction.** Physiology of secretory processes, digestion, absorption, excretion, respiration, metabolism and energy exchange, heat regulation, and production. (2) Mr. GREENE; Mr. THOMPSON.

103a. **Experimental Physiology.** Physiology of the circulation, respiration, muscle, and nerve; nervous system, and sense organs. (6) Mr. GREENE; Mr. BROWN.

104a and 104b. **Advanced Physiological Chemistry.** Elective. A course supplementing and extending course 101a. The preparation and chemistry of the proteins, a quantitative study of the tissues and secretions, of enzymes, of putrefaction and putrefaction products, analysis of typical foods, and the detection of food preservatives and adulterants. The prosecution of a short investigation and formal report on the same are required. (2 to 4) Mr. GULICK.

105b. **Experimental Pharmacology.** Physiological action of drugs. The experimental method is used thruout, the demonstrations being made on man and lower animals. (4) Mr. GREENE; Mr. BROWN.

107a and 107b. **Toxicology.** Elective. Prerequisite, physiology, course 101a or 105b. (2) or (3) Mr. GULICK.

109b. **Child, Growth and Development.** Elective. Prerequisite, elementary physiology, course 1a or 1b. (1) Mr. GREENE.

206b. **The Physiology of the Nervous System.** Elective. (2) or (3) Mr. GREENE.

208. **Journal Club.** Elective. (1) Mr. GREENE.

209a. **The Physiology and Pharmacology of the Circulatory System.** Elective. (3) Mr. GREENE.

210a and 210b. **Advanced Physiology.** Elective. Advanced courses in physiology, pharmacology and physiological chemistry. Individual problems will be assigned to students of sufficient preparation. Mr. GREENE; Mr. GULICK.

## ZOOLOGY

101a. **Embryology of Vertebrates.** Foundation of vertebrate embryology. Successive stages in the development of the frog, the chick, and the pig are studied from preparations of entire embryos and from serial sections. These observations are used as a basis of comparison for the study of human embryology. (3) Mr. LEFEVRE; Mr. TANNREUTHER.

For comparative anatomy, cytology, and other courses in zoology open to medical students as electives, see announcement under College of Arts and Science.

## ELECTIVES

Courses in botany, psychology, zoology, may be elected by students in the School of Medicine who are prepared to pursue them. See announcement of the College of Arts and Science in the annual catalog. With the consent of the dean, medical students may take any accessory work offered in other departments of the University.

### MEDICAL CERTIFICATE

On completing the work outlined in the regular medical curriculum, the student is awarded a Medical Certificate at the following commencement. This certificate will admit him, with full credit for the first two years of medicine, to the leading medical schools, where abundant clinical facilities are available for the last two years' work. Care should be taken, however, to meet the detailed entrance requirements for the particular school chosen.

### GRADUATE WORK IN MEDICAL SCIENCES

Special opportunity is given, and every encouragement is offered, to students who desire to do advanced work in any of the fundamental medical sciences. By a year of graduate work, the Master's Degree (A. M.) may be secured, and in three years the degree of Ph. D. Advanced work of the research type in the fundamental medical sciences is highly desirable as a basis for the most thoro work in clinical medicine. It is especially advantageous, however, for those students who desire to specialize with a view to becoming teachers in any of these branches. As previously mentioned, the demand for such teachers far exceeds the supply, and offers an attractive career which many graduates of this school have followed with success. Fellowships and scholarships are available to those who are qualified for graduate work. For further details, see general catalog or separate announcement of the Graduate School, University of Missouri.

To conduct research work successfully, it is self-evident that the teachers themselves should be active investigators. Such teachers are, moreover, as is proved by experience, those whose interest and enthusiasm for their work is also the source of inspiration for their undergraduate students. From every point of view the encouragement of research work is therefore a matter of highest importance.

# PARKER MEMORIAL HOSPITAL

## Staff

WOODSON MOSS and DAN G. STINE .....	Medicine
MAX W. MYER .....	Surgery and Obstetrics
GUY L. NOYES .....	Eye, Ear, Nose and Throat
A. W. KAMPSCHMIDT .....	Anesthesia
M. P. RAVENEL .....	Bacteriology
D. H. DOLLEY .....	Pathology
H. C. RENTSCHLER .....	Electrology and Photography

## Officers

GUY L. NOYES, M. D. ....	Superintendent
ELLEN M. ANDERSON, R. N. ....	Principal of the School for Nurses
NELLE SAPP, R. N. ....	Head Nurse

By the gift of William L. Parker, the University has an excellent hospital. In the words of the donor, the hospital is "for the benefit of the School of Medicine." The building is a handsome, modern structure, on high ground at the west side of the campus.

A surgical amphitheater adjoining the hospital has been provided by the gift of the late Adolphus Busch. The interior has been remodeled recently.

The Parker Memorial Hospital is owned and operated by the University primarily for the benefit of the University students. It is also open to the sick of Missouri for the treatment of acute and chronic curable diseases. Those who suffer from chronic incurable, or dangerous communicable diseases, are not admitted to the hospital.

Patients are admitted to the hospital at any hour of the day. Application for admission should be addressed to the superintendent of the hospital.

**Rates and Terms:** The following rates are for the maintenance of patients who are not students of the University, including bed, board, and general nursing, but not including medical or surgical service.

*General medical and surgical cases.* Single rooms, \$15 a week and upward. Wards, \$10 a week and upward.

*Obstetrical cases,* \$25 a week.

*Special nursing* may be arranged at the regular rates for registered nurses.

*Clinical patients,* \$7 per week, including medical and surgical attention when given by members of the staff.

*Extra fees* will be charged for medicines, special nursing, dressings and the use of the operating room or its equipment. Fees for maintenance are payable invariably in advance.



Physicians who hold consultation with or give treatment to patients not residents in the hospital, and require therefor the attendance of a nurse or the use of the equipment of the hospital, must pay a minimum fee of \$1 for such privilege.

### THE SCHOOL FOR NURSES

The school for nurses of the University of Missouri was organized in 1901. The school is conducted in connection with the Parker Memorial Hospital.

Pupil nurses receive their training in the hospital and laboratories of the University.

The course of instruction is thoro and familiarizes the pupils with the theory and practice of nursing. The course covers a period of three full years. The first three months of residence in the school are probationary; at the expiration of that time the pupil is regularly enrolled as a member of the school, provided she is found to be acceptable.

Recently the nurses have been established in a residence situated close to the hospital. The house has been rearranged so as to make it especially well adapted as a home for nurses.

**Requirements for Entrance to School for Nurses:** A high school education or its equivalent is required for entrance to the school for nurses. Men are not admitted. Candidates must be between the ages of 20 and 30 years and submit an acceptable statement concerning general health, civil state, and other things. Blank forms for this statement will be furnished upon application.

A special announcement giving detailed information concerning the school for nurses will be sent in response to requests for the same, addressed to the Principal of School for Nurses, Parker Memorial Hospital, University of Missouri, Columbia, Missouri.

### PRELIMINARY COURSE FOR NURSES

This course of studies, given in the first semester, is intended primarily for the entering class of students in the regular school for nurses but is open for such other students as can satisfy the requirements for entrance, whether they propose to complete their study of nursing in the University or not.

Provision is made especially for such student nurses as may be recommended for admission to the course by the superintendents of schools for nurses. With such students the purpose is to give them the advantages of the course and after its completion to have them return to the schools from which they came, for the further study of nursing.

Upon the satisfactory completion of the course, arrangement can be made for the admission to other first-class schools for nurses of



such students as do not immediately enter the curriculum of the school for nurses at the University.

Graduate nurses in good standing are admitted to the course and are allowed to do the work in part or in whole.

**Entrance Requirements for Preliminary Course:** All candidates for entrance must submit satisfactory evidence of fitness for entering the course as set down in the regular application blank furnished upon request. The candidate must further present evidence of having been graduated from a grammar school or its equivalent. Men will not be admitted to the course.

**Expenses:** No entrance, tuition, or laboratory fees will be charged for this course.

The cost for the necessary textbooks will be about \$10.

Students in the preliminary course will not live in the Nurses' Home, but will be required to engage board and room in houses approved by the principal of the school. They will also be required to conform to all the regulations established by the same authority concerning hours for study, recreation, etc.

Board and room may be obtained in Columbia at very reasonable rates.

**Studies of the Preliminary Course:**

Anatomy	Fundamental principles and practice of nursing
Physiology	Materia medica and weights and measures
Bacteriology	Preventive medicine
Dietetics	Voice training and reading
Practical handcraft	Physical training

For further information concerning the preliminary course, address the Principal, School for Nurses, University of Missouri, Columbia, Missouri.

# FACULTY OF THE SCHOOL OF MEDICINE

ALBERT ROSS HILL, A. B., Ph. D., LL. D.,

*President of the University.*

GUY LINCOLN NOYES, M. D.,

*Professor in the Department of Clinical Medicine and Surgery,  
Superintendent of Parker Memorial Hospital, Dean of the  
Faculty.*

SIDNEY CALVERT, B. S., A. M.,

*Professor of Organic Chemistry.*

ELIOT ROUND CLARK, A. B., M. D.,

*Professor of Anatomy.*

DAVID HOUGH DOLLEY, A. B., A. M., M. D.,

*Professor of Pathology.*

CHARLES WILSON GREENE, A. B., A. M., Ph. D.,

*Professor of Physiology.*

GEORGE LEFEVRE, A. B., Ph. D.,

*Professor of Zoology.*

WOODSON MOSS, M. D., LL. D.,

*Professor in the Department of Clinical Medicine and Surgery.*

MAX WASHINGTON MYER, A. B., M. D.,

*Professor in the Department of Clinical Medicine and Surgery.*

MAZYCK PORCHER RAVENEL, M. D.,

*Professor of Medical Bacteriology and Preventive Medicine, Direc-  
tor of the Public Health Laboratory.*

FRANKLIN PARADISE JOHNSON, A. B., A. M., Ph. D.,

*Associate Professor of Anatomy.*

DAN GISH STINE, A. B., M. D.,

*Associate Professor in the Department of Clinical Medicine and  
Surgery.*

ADDISON GULICK, A. B., A. M., Ph. D.,

*Assistant Professor of Physiology.*

OSCAR FRANKLIN BRADFORD, A. B., M. D.,

*Instructor in Bacteriology and Preventive Medicine.*

RALPH RAYBURN SIMMONS, A. B., A. M., M. D.,

*Instructor in Pathology.*

GEORGE WASHINGTON TANNREUTHER, A. B., A. M., Ph. D.,

*Instructor in Zoology.*

JOHN ISAAC APPLEBY, A. B.,

*Assistant in Anatomy.*

GAYLORD TALMADGE BLOOMER,

*Assistant in Anatomy.*

GLENN DELOP JOHNSON, A. B.,

*Assistant in Physiology.*

LLOYD JAMES THOMPSON, A. B.,

*Assistant in Physiology.*

CARL SNEED WILLIAMSON,

*Assistant in Anatomy.*

ELLEN MARIE ANDERSON, R. N.,

*Principal of the School for Nurses.*

NELLE FRANCIS SAPP, R. N.,

*Head Nurse, Parker Memorial Hospital.*

### THE UNIVERSITY OF MISSOURI

The University of Missouri stands at the head of the educational systems of the state. It is one of the oldest institutions in the West.

The University was founded at Columbia in 1839 and instruction in academic work was begun in 1841. Few schools in the United States have made the advancement that Missouri has made during the last twenty years. In 1897 the enrollment was only 805 and in the session of 1916-17 it was 4349. The increased enrollment is but indicative of the development of the school in educational efficiency.

The work of the University is now carried on in the following schools and colleges:

College of Arts and Science

College of Agriculture

School of Education

School of Law

School of Medicine

School of Engineering

School of Mines and Metallurgy

School of Journalism

School of Business and Public Administration

Graduate School

Extension Division

All of these divisions are at Columbia with the exception of the School of Mines and Metallurgy, which is located at Rolla. In addition, emphasis is given particular lines of work by the establishment of minor divisions, the chief of which are the Agricultural Experiment Station, the Engineering Experiment Station, and the Missouri State Military School.

The fundamental aim of the University is the development of the highest and most efficient type of citizen. The school is supported by the state and endeavors to return to the state practical service. Of later years the University has endeavored to go beyond the campus in its influence on the welfare of the people of Missouri. Extension courses, experiment farms, and free literature on practical subjects

are some of the methods adopted. The various extension courses have proved highly satisfactory and have rendered real service to people of the state who previously benefited only indirectly from the University.

The University is located at Columbia, a town situated half way between St. Louis and Kansas City near the center of the state. It is reached by the Wabash, and the Missouri, Kansas and Texas railways. Columbia is a progressive and prosperous town having doubled its population in the last few years. It has nearly forty miles of paved streets.

The University grounds cover more than 800 acres. The main divisions are in the West Campus, the East Campus, the athletic fields, and the University farm.

The following University buildings are located at Columbia: Academic Hall; Laws Observatory; separate buildings for chemistry, physics, biology, business and public administration and geology, engineering, manual arts, law; two power houses; Library Building; Medical Laboratory Building; Parker Memorial Hospital; Agriculture Building; Horticulture Building; Schweitzer Hall for agricultural chemistry; green houses; Live Stock Judging, Poultry, Dairy, Farm Machinery, and Veterinary buildings; the University farm barns and buildings; Switzler Hall for the School of Journalism; Gordon Hotel Building for home economics; Benton and Lathrop halls, dormitories for men; Read Hall, dormitory for women; Rothwell Gymnasium; the houses for the President of the University and the Dean of the Faculty of Agriculture; the High School and the Elementary School buildings, used for practice schools in the School of Education.

### FOR FURTHER INFORMATION

For further information concerning the School of Medicine, address

DEAN, FACULTY OF MEDICINE,

UNIVERSITY OF MISSOURI,

COLUMBIA, MISSOURI.

Full information regarding the University is given in the University catalog, which will be sent on request without charge. For this or special bulletins of the College of Arts and Science, College of Agriculture, School of Education, School of Law, School of Engineering, School of Journalism, School of Business and Public Administration, Extension Division and the Graduate School, write to

THE REGISTRAR,

UNIVERSITY OF MISSOURI,

COLUMBIA, MISSOURI.

# THE UNIVERSITY OF MISSOURI BULLETIN

## GENERAL SERIES

EDITED BY

H. H. KINYON

*University Publisher*

The General Series of the University of Missouri Bulletin consists of the announcements of the various colleges and schools which make up the University. These announcements will be sent free upon request to the Registrar, University of Missouri, Columbia, Missouri.

Published by

UNIVERSITY OF MISSOURI

COLUMBIA, MISSOURI





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1919/20

THE UNIVERSITY OF MISSOURI BULLETIN  
VOLUME 20, NUMBER 10

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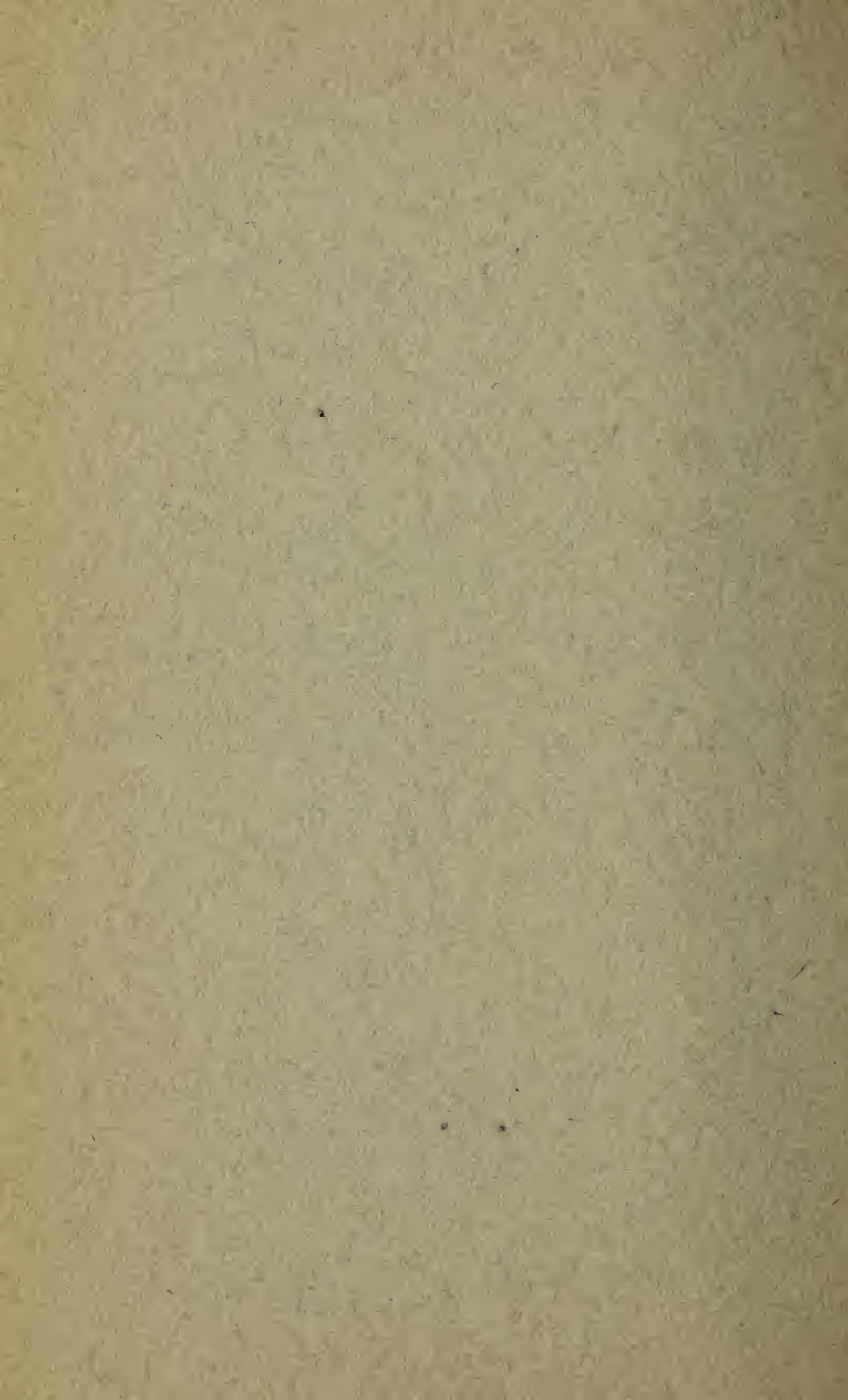
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SCHOOL OF MEDICINE

ANNOUNCEMENT 1919-20



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THE UNIVERSITY OF MISSOURI BULLETIN

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GENERAL SERIES

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ANNOUNCEMENT 1919-20



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ISSUED THREE TIMES MONTHLY; ENTERED AS SECOND-CLASS MAT-  
TER AT THE POSTOFFICE AT COLUMBIA, MISSOURI—2,000  
APRIL 10, 1919





# THE SCHOOL OF MEDICINE

## HISTORICAL STATEMENT

The Medical Department of Kemper College ("McDowell Medical College"), founded in St. Louis in 1840, was the first medical school established west of the Mississippi River. In 1845 this school became the Medical Department of the University of Missouri. In 1855, however, it was discontinued, but was re-established in Columbia in December, 1872. The curriculum was at first only two years in length, but was extended to three years in 1891, and to the full four years in 1899.

Owing to the limited clinical facilities available at present, the last two (clinical) years of the medical curriculum have been temporarily suspended. A plan for the establishment of a general state hospital has been adopted by the University, and the clinical portion of the work will be resumed as soon as it is practicable to establish it with adequate clinical facilities. In the meantime, the first two years of the medical curriculum will be continued at Columbia and still further strengthened.

The School of Medicine has always stood for the highest standards of medical education, and was a pioneer in introducing and developing the laboratory method. Laboratory work in anatomy, chemistry, and microscopy was required of students from the date of re-establishment in 1872. A few years later laboratory work in pathology and in physiology was added, and in 1891 the laboratories of histology and bacteriology were established. The School of Medicine of the University of Missouri was also one of the first schools to place these fundamental medical sciences in charge of specialists who are not allowed to practice medicine, but devote their time exclusively to teaching and investigation.

**Organization and Support:** The nature of the organization and support of a medical school is a matter of primary importance. The School of Medicine of the University of Missouri is an integral part of the University, whose total income from all sources is about \$1,125,000 a year. The School of Medicine is supported from this income, about \$50,000 being expended annually for this purpose (including hospital), while less than \$3,000 is collected in fees from the medical students.

As a result of this liberal support, it has been possible for many years to organize and maintain the medical work on a proper University basis. The course of study is carefully planned, modern lab-

oratory methods being used thruout. The high standards of admission result in small classes, prepared for the highest type of work. Women are admitted on equal terms with men.

### HIGH STANDING OF THE SCHOOL OF MEDICINE

The School of Medicine of the University is rated in the highest class by the Council on Medical Education of the American Medical Association. It is also a member of the Association of American Medical Colleges. In the report of the Carnegie Foundation published in 1910, the facilities of the School of Medicine of the University of Missouri are summarized (p. 251) as follows: "The medical department occupies a new and well equipped building, excellently adapted to its purposes. The teaching is in charge of full-time instructors of modern training and ideas. A university hospital of forty-five beds gives the department the advantage of clinical material and connection, even tho the actual instruction is limited to the work of the first two years, a feature of great importance. There is a library supplied with important current periodicals, domestic and foreign."

**Low Cost of Medical Education:** Another advantage is the unusually low cost at which premedical and medical education of the highest type may here be obtained.

**Tuition at the University of Missouri** is free to residents of the state but a library, hospital and incidental fee of \$15 a term is charged. Nonresident students must also pay a tuition fee of \$10 a term.

**The Commons:** The Commons is under University management. It is open to both men and women. It consists of a cafeteria in which meals are served at very reasonable rates. The average rate is 23 cents a meal.

### Estimated Expenses for One Term:

Fees .....	\$ 15
Board .....	88
Rent .....	25
Laundry .....	12
Books and stationery .....	15
Miscellaneous .....	40
<hr/>	
Total.....	\$195

These estimates show the expenses of the *average* male student. Expenses for a woman will usually be \$25 higher. No provision is made in the estimates for clothing and railway fares. Non-resident students are required to pay an additional nonresident tuition fee of \$10 a term.

A student wishing to economize can save about \$15 a term by boarding at The Commons. He can reduce room rent about \$20 by living in the University dormitory. Miscellaneous expenses listed above cover amusements, organization dues, etc. Some saving may be made in them. The item for books and stationery will vary with the college or school in which work is taken. Laboratory fees will also vary.

Students who desire work should apply to the Employment Bureau, Y. M. C. A., University of Missouri. As a rule, every student should have at least \$100 ahead at the start, and those who come before school opens have the best chance for employment. Board may be obtained in private families for from \$4 to \$6 a week.

**Rollins Scholarship:** The Rollins Scholarship in the School of Medicine is a prize of \$50 which is awarded by vote of the medical faculty to that member of the first year class (third year of combined curriculum) who has made the best record during the course.

**Register of Students:** At commencement in April, 1919, the Medical Certificate was awarded to thirty students. During the session 1918-19 there were enrolled twenty-eight in the first year class, thirty-eight in the second year class, a total of sixty-six. The names of these students are published elsewhere in this announcement.

## BUILDINGS AND EQUIPMENT

Next to the faculty, among the factors which determine the efficiency, come the buildings and material equipment. The School of Medicine is located upon the same campus with other divisions of the University. Of the various buildings on the campus, a group of three—the Medical Laboratory Building, the Parker Memorial Hospital and the animal house—are devoted primarily to the School of Medicine. These will be described in some detail. Several other buildings are also utilized in part for medical instruction.

**Medical Laboratory Building:** The Medical Laboratory Building is a stone and brick building, 48 x 150 feet, three stories high. It was especially designed for the medical laboratories, and is well equipped to meet the needs of modern laboratory instruction and research. The following is a brief list of the various rooms and equipment in this building:

The department of anatomy and histology occupies a large dissecting room, well lighted and ventilated, with dissecting tables, students' lockers, display cases for specimens, models, and advanced anatomical laboratory, especially equipped for the study of topographic anatomy, including serial sections thru formalin hardened bodies;

histological laboratory, with preparation and store-room in connection, thoroly equipped with lockers, tables, microscopes, microtomes, and other apparatus for instruction and research in microscopic work; lecture room for anatomy and histology, equipped with Auzoux manikin, projection apparatus, charts; museum and study room; with adjacent preparation room, containing a large number of models and specimens in human anatomy, research laboratory; embalming and storage rooms, with an abundance of well preserved cadavers for the work in dissection.

The department of physiology, physiological chemistry, and pharmacology occupies the following rooms: a large laboratory with adjoining store-room, equipped with tables, lockers, and sets of apparatus for the students in physiology and pharmacology; a blood-pressure room, particularly for mammalian experiments; a research laboratory, thoroly equipped, for advanced students in physiology and pharmacology; research laboratory in physiological chemistry; large students' laboratory with adjacent store-room, thoroly equipped for work in physiological chemistry; animal room; mechanic's shop; lecture room (in common with pathology).

The departments of pathology and bacteriology, occupy a large students' laboratory for bacteriology and pathological histology, well equipped with lockers, microscopes with oil immersion lenses; a preparation room for bacteriology, with sterilizers, incubators; private laboratory, well equipped for research work in pathology; room for autopsies and work in gross pathology, including a collection of pathological specimens in glass cases; an animal room and store-room; office and research laboratory for bacteriology; lecture room (in common with physiology); laboratory room for work of preventive medicine.

**Medical Library:** No medical school of today can be considered well equipped without a good library. The medical library is placed in a room on the upper floor of the Medical Laboratory Building, and is open eight hours daily, except Sunday. It contains 5,752 bound volumes, and a large number of pamphlets. The principal medical works of reference are included and 100 leading medical periodicals of the world are received regularly and placed on file. Complete sets of most of these journals are available. The main University Library also contains many works of interest and value to the medical sciences.

A complete catalog of the books and periodicals in the medical library will be furnished free by the University Librarian upon request. The journals and books in the library will be lent free to any reputable physician of the state. The borrower is required to pay the transportation charges both ways.



Provision is also made for sending out circulating libraries to county medical societies arranged in circuits. For information, address the University Librarian, or Dean of the Faculty of Medicine, University of Missouri, Columbia, Missouri.

**Animal House:** The animal house is located near the Medical Laboratory Building. It is a brick structure, well lighted, heated, and ventilated. This building provides excellent facilities for rearing and preserving animals, and for investigations in the various lines of medical science. It is of especial value for the experimental work in physiology, pathology and bacteriology.

**Other Buildings:** In several other buildings on the University campus (chemistry, zoology, etc.), instruction is offered in many lines open to medical students as electives, and of especial service to those taking the combined curriculum in medicine and in arts and science. The gymnasium and athletic grounds are open for the use of all students, and special opportunities are offered to those interested.

## ENTRANCE REQUIREMENTS

The requirements for admission to the School of Medicine include:

(1) Fifteen units, the equivalent of a four years' high school course, including at least 3 units of English, 1 unit in mathematics, 2 units in one foreign language, the remaining being elective. For further details, see general catalog of the University.

(2) Two years (60 hours' credit) of college work, including French or German, 8 hours; general zoology, 8 hours; general physics, 8 hours; inorganic chemistry, 8 hours; organic chemistry, 5 hours; general bacteriology, 3 hours; and such other subjects as are included in the undergraduate requirements of the College of Arts and Science of the University of Missouri. See the general catalog of the University.

All correspondence regarding admission should be addressed to The Registrar, University of Missouri, Columbia, Missouri.

**Advanced Standing:** Every applicant for advanced standing is required to present credentials from an accredited college, and to pass such examinations as may be required to show satisfactory completion of courses equivalent to those for which he seeks credit.

Moreover, the usual entrance requirements to the first year class



must be satisfied, and evidence of a good moral character must be presented to the dean of the faculty of medicine.

Special students will not be admitted to the school.

### COMBINED WORK IN ARTS AND MEDICINE

Students who have completed the secondary school work, as above outlined, but not the college work, are advised to enter the College of Arts and Science of the University to secure this work.

By the proper choice of electives in the College of Arts and Science, students may within four years complete the two years' college work required for admission, do the two years' work in medicine, and at the same time meet the requirements for the degree of Bachelor of Arts. Such students are registered during the first two years in the College of Arts and Science only. During the last two years, however, they must register both in the School of Medicine and in the College of Arts and Science and must meet the requirements of both. Students are recommended to elect the subjects required, or which lead up to subjects required in medicine, in approximately the order suggested by the following tabulated statement. The work outlined for the first and second years includes all the college work which is required for entrance to the regular medical curriculum.

The entrance requirement for the combined curriculum outlined above is that specified for the College of Arts and Science, i. e., a high school course equivalent to fifteen units. A student who follows this curriculum will, at the end of four years, have completed the requirements for the A. B. degree. He will also have completed the two years' work in medicine, and will require only two years more (or six years in all) for the M. D. degree. Students who wish to do more than the required amount of premedical collegiate work may extend the time to the amount desired. All students who contemplate taking this work should consult the dean of the faculty of medicine.

Curriculum Leading to the Degrees of A. B. and M. D. Recommended by the Medical Faculty:

FIRST YEAR	First Term Hours Credit	Second Term Hours Credit
English .....	3	3
German or French 1f and w, 2f and w.....	5	5
Physics 1f and w. and 2w. ....	5	3
Elem. Logic or Gen. Mathematics .....	3	0
Chemistry 4f and w. or 6w. ....	0	5
Military Science and Tactics .....	1	1
	17	17
SECOND YEAR		
Zoology 1f and w. and 4w. ....	5	5
Chemistry 25f and w. 110f and w.....	5	5
Gen. Bacteriology (Botany 3f and w.).....	0	3
History 1f and w. ....	5	0
Military Science and Tactics .....	1	1
Elective .....	0	2
	16	16
THIRD YEAR		
Same as first year of regular medical curriculum		
FOURTH YEAR		
Same as second year of regular medical curriculum		

Premedical students should keep in mind the desirability of observing certain sequences when planning the work of the first two years of the combined curriculum. The proper sequences are the following:

*The Physical Group.*

- (1) Elementary Physics, 1f and w.
- (2) Elementary Physics, 2w.
- (3) General Laboratory Physics 20f and w.

*The Chemical Group.*

- (1) Elementary Inorganic Chemistry, 4f and w.
- (2) Analytical Chemistry, 25f and w.
- (3) Organic Chemistry, 110f and w.
- (4) Physiological Chemistry, 101f.

*The Biological Group.*

- (1) General Zoology, 1f and w.
- (2) Comparative Anatomy of Vertebrates, 4w.
- (3) Parasitology, 106w.
- (4) Embryology of Vertebrates, 101f.
- (5) Gross Anatomy, 102f and 103w.
- (6) Normal Histology, 104w.
- (7) Neurology, 105f.
- (8) Experimental Physiology, 105f.

*The Bacteriological-Pathological Group.*

- (1) General Bacteriology, 3f and w.
- (2) Medical Bacteriology, 102w.

The work above outlined in the regular medical curriculum provides a thoro training in the various subjects usually included in the first two years of medicine. It meets the requirements of the Association of American Medical Colleges, of which this school is a member, and follows closely the ideal courses in the laboratory subjects recommended by the Council on Medical Education of the American Medical Association. The individual courses are described in detail on the following pages.

## MEDICAL CURRICULUM

FIRST YEAR	Term Credits		Hours		
	1st Term	2d Term	Lecture	Laboratory	Total
Embryology .....	3	....	16	64	80
Gross Anatomy .....	8	4	32	384	416
Histology .....	5	....	32	128	160
Physiological Chemistry ....	....	5	32	144	176
Neurology .....	....	3	16	80	96
Medical Bacteriology .....	....	4	32	80	112
	16	16	160	880	1040
SECOND YEAR					
Physiology, 103f .....	2	....	16	48	64
Physiology, 105f .....	6	....	48	144	192
Materia Medica and Prescrip- tion Writing .....	1	....	16	32	48
Pathology .....	4	4	64	224	288
Hygiene .....	2	....	32	....	32
Pharmacology .....	....	4	32	96	128
Physical Diagnosis .....	....	3	48	32	80
Minor Surgery .....	....	2	16	32	48
Elective .....	....	3	....	....	112
	15	16	272	608	992

## STATEMENT OF COURSES

**Course Numbers:** Courses for underclassmen are designated by numbers below 100; courses for upperclassmen and graduates, by numbers 100-199; courses primarily for graduates, numbers 200-299.

The letter following the number of a course indicates the term in which it is offered; thus course 100f is offered during the fall term, 100w during the winter term. The number of hours' credit given for a course is indicated by the Arabic numeral in parenthesis following the statement of the course.

## ANATOMY

102f. **Gross Anatomy.** The study of the gross anatomy of the head and trunk of the human body, excepting the central nervous system and sense organs. For use in the study of osteology, which is correlated with the work in dissection, a complete disarticulated human skeleton is issued to every two students. (8) Mr. CLARK.

103w. **Gross Anatomy.** A study of the gross anatomy of the extremities of the human body. (4) Mr. CLARK; Mr. GAEBLER; Mr. MUIR.

104f. **Histology.** The study of the microscopic anatomy of the tissues and organs of the human body. (5) Mr. ALBRITTON; Miss BROWN.

105w. **Neurology.** A study of the gross and microscopic anatomy of the central nervous system and sense organs. (3) Mr. CLARK; and Miss BROWN.

106f and 106w. **Topographic Anatomy.** Elective. Open to students who have completed the course in gross anatomy, histology and neurology. (2) or (3) Mr. CLARK.

107w. **Study-room Course in Anatomy.** Elective. Prerequisite course 102f. Dissected parts of the body are preserved and are available for informal study or review. This study may be combined with a study of cross-sections. (2 or 3). Mr. CLARK.

206f and 207w. **Advanced Anatomy.** Elective. Prerequisites, courses 102f, 104f or 105w. Advanced work will be given in any of the special fields of anatomy, the amount and character of which will be varied to suit individual needs. Mr. CLARK.

208f and 209w. **Research.** Problems for original investigation will be assigned in anatomy, histology, or embryology. A reading knowledge of French and German is required. Mr. CLARK.

## BACTERIOLOGY AND PREVENTIVE MEDICINE

102w. **Medical Bacteriology.** Prerequisite, botany, course 3f. Subjects studied include relation of bacteria to disease; the fundamental principles of immunity, serum diagnosis, serum and vaccine therapy. The different diseases are discussed, and the micro-organisms causing them are studied in the laboratory, with animal inoculations and demonstrations. The course includes also the study of the best known diseases caused by protozoa. (4) Mr. RAVENEL; Mr. BALDWIN.

101w. **General Hygiene.** Prerequisite, course 102w. Deals in a more detailed manner with the fundamental principles of public and personal hygiene and with the regulatory measures directed toward the improvement of general health. (2) Mr. RAVENEL; Mr. BALDWIN.

201f or w. **Advanced Bacteriology.** Elective. Prerequisite, course 102w. Amount and character of work will depend on needs and



qualifications of students. The manufacture of autogenous vaccines, the determination of the opsonic index, making and use of various sera, study of milk and water are among the subjects suggested for study. Hours to be arranged. Mr. BALDWIN.

202f or w. **Research.** Elective. Prerequisite, course 102w. Students who are sufficiently prepared will be given problems requiring original investigation in the fields of bacteriology and public health. A reading knowledge of French and German recommended. Hours to be arranged. Mr. RAVENEL.

203f or w. **Conduct of Public Health Laboratories.** Elective. Prerequisites, course 102w and 201. Designed for those who expect to take up such work as a profession or for teaching purposes. Graduates in medicine preferred. The collection and shipment of various specimens, their examination, milk, and water problems, etc., will be discussed and the practical work carried out in the laboratory. Hours to be arranged. Mr. RAVENEL; Mr. BALDWIN.

## CLINICAL MEDICINE AND SURGERY

101w. **Physical Diagnosis.** Lectures, demonstrations and practical exercises covering the field of the physical examination of the thorax. Practice in the use of instruments ordinarily used in auscultation and percussion especially with reference to the recognition of the physical signs of normal and disease processes in the respiratory and circulatory organs. (3) Mr. STINE.

102w. **Minor Surgery.** The lectures on the general principles of surgery include the consideration of asepsis and antisepsis, inflammation, healing of wounds, hemorrhage and sepsis. Material for the demonstration of the minor surgical lesions is obtained from the dispensary. The laboratory periods are devoted to a study of bandaging and the preparation and use of surgical material and dressings. Each student will have twelve lessons on the practical application of bandages, including the general principles in the use of plaster bandages, adhesive dressings, splints, etc. The preparation of dressings and instruments is studied in the hospital. Practical work in preparation for operation and surgical technic is carried out in the animal operating rooms. Co-operation with the bacteriological laboratory makes it possible to emphasize the importance of careful technic by requiring the students to keep a complete bacteriological check on their work. (2) Mr. MYER.

## PATHOLOGY

101f. **Pathology and Pathological Anatomy.** A laboratory course, supplemented by lectures and recitations, for the histological study of the general and special manifestations of disease. (4) Mr. DOLLEY; Miss GUTHRIE.

102w. **Pathology and Pathological Anatomy.** A continuation of 101f which is a prerequisite for this course. (4) Mr. DOLLEY; Miss GUTHRIE.

201f and 202w. **Advanced Pathology.** Elective. The amount and character of the work will depend upon the needs and qualifications of the student. Mr. DOLLEY; Miss GUTHRIE.

203f, 204w and 205sp. **Research.** Elective. A reading knowledge of German is required and one of French is recommended. Mr. DOLLEY.

206sp. **Pathological Physiology.** Elective. An experimental course. (2) Mr. DOLLEY; Miss GUTHRIE.

### PHYSIOLOGY AND PHARMACOLOGY

101w. **General Physiological Chemistry.** Prerequisite, organic chemistry, course 111 or equivalent. (5) Mr. GULICK; Mr. EWING.

103f. **Physiology of Secretion, Alimentary Mechanisms, and Reproduction.** (2) Mr. GREENE; Mr. BUSH; Mr. LOVE.

105f. **Experimental Physiology.** Physiology of the circulation, respiration, muscle and nerve; nervous system, and sense organs. (6) Mr. GREENE; Mr. BUSH; Mr. MUSICK.

108w. **Experimental Pharmacology.** Physiological action of drugs. The experimental method is used thruout. (4) Mr. BUSH; Mr. GULICK.

110f. **Prescription Writing and Materia Medica.** Supplementary to course 108w. Taking up the methods of making pharmaceuticals and giving practical experience in physiological assays. Special attention is given to dosage and prescription writing. (1) Mr. GREENE.

115f and 116w. **Advanced Physiological Chemistry.** A course supplementing and extending course 101. The prosecution of a short investigation and formal report on the same are required. (2) to (4). Mr. GULICK.

117f and 118w. **Toxicology.** Prerequisite, physiology, course 115 or 108. (2) or (4) Mr. GULICK.

109w. **Child Growth and Development.** Prerequisite, elementary physiology, course 1. (1)

123f. **The Physiology and Pharmacology of the Circulatory System.** (3) Mr. GREENE.

226w. **The Physiology of the Nervous System.** (3)

227f and 228w. **Journal Club.** (1)

231f and 232w. **Advanced Physiology.** Advanced courses in physiology, pharmacology and physiological chemistry. Individual problems will be assigned to students of sufficient preparation. Mr. GREENE; Mr. GULICK.

241f and 242w. **Research.** Opportunity is offered for research in questions of current interest in either of the fields represented. Mr. GREENE.

## ZOOLOGY

101f and 101sp. **Embryology of Vertebrates.** Designed to lay the foundation of vertebrate embryology. Successive stages in the development of the frog, the chick, and the pig are studied from preparations of entire embryos and from serial sections. These observations are used as a basis of comparison for the study of human embryology. (3) Mr. LEFEVRE; Mr. TANNREUTHER.

For comparative anatomy, cytology, protozoology, parasitology, and other courses in zoology open to medical students as electives, see announcement under College of Arts and Science.

## ELECTIVES

Courses in botany, psychology, zoology, may be elected by students in the School of Medicine who are prepared to pursue them. See announcement of the College of Arts and Science. With the consent of the dean, medical students may take any accessory work offered in other departments of the University. Students must elect from a group of courses approved by the Faculty of Medicine a minimum of three hours of work in the second term of the second year of the Medical Curriculum.

## MEDICAL CERTIFICATE

On completing the work outlined in the regular medical curriculum, the student is awarded a Medical Certificate at the following commencement. This certificate will admit him, with full credit for the first two years of medicine, to the leading medical schools, where abundant clinical facilities are available for the last two years' work. Care should be taken, however, to meet the detailed entrance requirements for the particular school chosen.

## GRADUATE WORK IN MEDICAL SCIENCES

Special opportunity is given, and every encouragement is offered, to students who desire to do advanced work in any of the fundamental medical sciences. By a year of graduate work, the Master's Degree (A. M.) may be secured, and in three years the degree of Ph. D. Advanced work of the research type in the fundamental medical sciences is highly desirable as a basis for the most thoro work in clinical medicine. It is especially advantageous, however, for those students who desire to specialize with a view to becoming teachers in any of these branches. The demand for such teachers far exceeds the supply, and offers an attractive career which many graduates of this school have followed with success. Fellowships and scholarships are available to those who are qualified for graduate work. For further details, see general catalog or separate announcement of the Graduate School, University of Missouri.

To conduct research work successfully, it is self-evident that the teachers themselves should be active investigators. Such teachers are, moreover, as is proved by experience, those whose interest and enthusiasm for their work is also the source of inspiration for their undergraduate students. From every point of view the encouragement of research work is therefore a matter of highest importance.

## THE PARKER MEMORIAL HOSPITAL

### Staff

DAN G. STINE .....	Medicine
MAX W. MYER .....	Surgery and Obstetrics
GUY L. NOYES .....	Eye, Ear, Nose and Throat
A. W. KAMPSCHMIDT .....	Anesthesia
M. P. RAVENEL .....	Bacteriology
D. H. DOLLEY .....	Pathology
H. B. WAHLIN .....	Electrology and Photography

### Officers

GUY L. NOYES, M. D. ....	Superintendent
ELLEN M. ANDERSON, R. N. ....	Principal of the School for Nurses
MARCIA P. COOMBS, R. N. ....	Head Nurse

By the gift of William L. Parker, the University has an excellent hospital. In the words of the donor, the hospital is "for the benefit of the School of Medicine." The building is a handsome, modern structure, on high ground at the west side of the campus.

A surgical amphitheater adjoining the hospital has been provided by the gift of the late Adolphus Busch. The interior has been remodeled recently. A very modern and complete X-ray equipment has recently been installed in the hospital.

The Parker Memorial Hospital is owned and operated by the University primarily for the benefit of the University students. It is also open to the sick of Missouri for the treatment of acute and chronic curable diseases. Those who suffer from chronic incurable, or dangerous communicable diseases, are not admitted to the hospital.

Patients are admitted to the hospital at any hour of the day. Application for admission should be addressed to the superintendent of the hospital.

**Rates and Terms:** The following rates are for the maintenance of patients who are not students of the University, including bed, board, and general nursing, but not including medical or surgical service.

*General medical and surgical cases.* Single rooms, \$21 a week and upward. Wards, \$14 a week and upward.



*Obstetrical cases*, \$25 a week.

*Special nursing* may be arranged at the regular rates for registered nurses.

*Clinical patients*, \$7 per week, including medical and surgical attention when given by members of the staff.

*Extra fees* will be charged for medicines, special nursing, dressings and the use of the operating room or its equipment. Fees for maintenance are payable invariably in advance.

Physicians who hold consultation with or give treatment to patients not residents in the hospital, and require therefor the attendance of a nurse or the use of the equipment of the hospital, must pay a minimum fee of \$1 for such privilege.

### THE SCHOOL FOR NURSES

The school for nurses of the University of Missouri was organized in 1901. The school is conducted in connection with the Parker Memorial Hospital.

Pupil nurses receive their training in the hospital and laboratories of the University.

The course of instruction is thoro and familiarizes the pupils with the theory and practice of nursing. The course covers a period of three full years. The first three months of residence in the school are probationary; at the expiration of that time the pupil is regularly enrolled as a member of the school, provided she is found to be acceptable.

Recently the nurses have been established in a residence situated close to the hospital. The house has been rearranged so as to make it especially well adapted as a home for nurses.

The school is affiliated with the City Hospital Training School for Nurses of St. Louis. This association makes it possible for pupil nurses in this school to pursue such studies as are possible only in a large hospital. Each nurse will spend three months of her senior year in residence in the City Hospital Training School. Her period of study there will be counted as part of the required work of this school. The diploma of the School for Nurses is awarded by the University upon satisfactory completion of all the required subjects of the curriculum of the school.

**Requirements for Entrance to School for Nurses.** A high school education or its equivalent is required for entrance to the school for nurses. Men are not admitted. Candidates must be between 20 and 30 years old and submit an acceptable statement concerning general health, civil state, and other things. Blank forms for this statement will be furnished upon application.

A special announcement giving detailed information concerning the school for nurses will be sent in response to requests for the same, addressed to the Principal of School for Nurses, Parker Memorial Hospital, University of Missouri, Columbia, Missouri.



## PRELIMINARY COURSE FOR NURSES

This course of studies, given in the fall term, is intended primarily for the entering class of students in the regular school for nurses, but is open for such other students as can satisfy the requirements for entrance, whether they propose to complete their study of nursing in the University or not.

Provision is made especially for such student nurses as may be recommended for admission to the course by the superintendents of schools for nurses. With such students the purpose is to give them the advantages of the course and after its completion to have them return to the schools from which they came, for the further study of nursing.

Upon the satisfactory completion of the course, arrangement can be made for the admission to other first-class schools for nurses of such students as do not immediately enter the curriculum of the school for nurses at the University.

Graduate nurses who desire to review the fundamental subjects of the curriculum are admitted to the course and are allowed to do the work in part or in whole.

**Expenses:** No entrance, tuition, or laboratory fees will be charged for this course.

The cost for the necessary textbooks for the full term will be about \$10.

## Studies of the Preliminary Course:

Anatomy	Fundamental principles and practice of nursing
	Materia medica and weights and measures
Bacteriology	Preventive medicine
Dietetics	Voice training and reading
Practical handcraft	Physical training

For further information concerning the preliminary course, address the Principal, School for Nurses, University of Missouri, Columbia, Missouri.

## FACULTY OF THE SCHOOL OF MEDICINE

- ALBERT ROSS HILL, A. B., Ph. D., LL. D.,  
President of the University.
- GUY LINCOLN NOYES, M. D.,  
Professor in the Department of Clinical Medicine and Surgery.  
Superintendent of Parker Memorial Hospital, Dean of the Faculty.
- ELIOT ROUND CLARK, A. B., M. D.,  
Professor of Anatomy.
- DAVID HOUGH DOLLEY, A. B., A. M., M. D.,  
Professor of Pathology.
- \*CHARLES WILSON GREENE, A. B., A. M., Ph. D.,  
Professor of Physiology and Pharmacology.
- GEORGE LEFEVRE, A. B., Ph. D.,  
Professor of Zoology.
- MAX WASHINGTON MYER, A. B., M. D.,  
Professor in the department of Clinical Medicine and Surgery.
- MAZYCK PORCHER RAVENEL, M. D.,  
Professor of Medical Bacteriology and Preventive Medicine, Director of Public Health Laboratory.
- DAN GISH STINE, A. B., M. D.,  
Professor in the Department of Clinical Medicine and Surgery.
- FREDERICK AMOS BALDWIN, A. B., Sc. D., M. D.,  
Associate Professor of Medical Bacteriology.
- ADDISON GULICK, A. B., A. M., Ph. D.,  
Associate Professor of Physiology.
- ERRETT CYRIL ALBRITTON, A. B.,  
Instructor in Anatomy.
- FRANCES VIRGINIA GUTHRIE, A. B., B. S., A. M.,  
Instructor in Pathology.
- GEORGE WASHINGTON TANNREUTHER, A. B., A. M., Ph. D.,  
Instructor in Zoology.
- SUSAN WILLARD BROWN,  
Assistant in Anatomy.
- HARRY RUSSELL EWING,  
Assistant in Physiological Chemistry.
- OLIVER HENRY GAEBLER,  
Assistant in Anatomy.
- WALTER STANDLEE LOVE,  
Assistant in Physiology.
- HUGH POTEET MUIR,  
Assistant in Anatomy.

ELMER RAE MUSICK,

Assistant in Physiology.

ELLEN MARIE ANDERSON, R. N.,

Principal of the School for Nurses.

MARCIA PHALINA COOMBS, R. N.,

Head Nurse, Parker Memorial Hospital.

\*NELLE FRANCIS SAPP, R. N.,

Head Nurse, Parker Memorial Hospital.

\*On leave of absence.

# UNIVERSITY CALENDAR

Session 1919-20

1919

## FALL TERM

Aug. 26, 27, 28 .....	Tuesday, Wednesday, Thursday, entrance examinations
Aug. 29, 30 .....	Friday, Saturday, registration
Aug. 30, 7:30 p. m. ....	Saturday, opening convocation
Sept. 1, 8 a. m. ....	Monday, class work begins
Oct. 27, 8 a. m. ....	Monday, to
Dec. 20, noon .....	Saturday
Nov 27 .....	Thursday, Thanksgiving Day, holiday
Dec. 20, noon .....	Saturday, fall term ends
	Christmas Holidays

## WINTER TERM

Dec. 30 .....	Tuesday, registration
Dec. 30, 7:30 p. m. ....	Tuesday, opening convocation
Dec. 31, 8 a. m. ....	Wednesday, class work begins
Dec. 31, 8 a. m. ....	Wednesday, to
1920	
Feb. 27, 4 p. m. ....	Friday
Feb. 22 .....	Sunday, Washington's Birthday
April 18 .....	Sunday, Baccalaureate Address
April 20, 4 p. m. ....	Tuesday, winter term ends
April 22 .....	Thursday, Commencement Day

## SPRING-SUMMER TERM

April 24 .....	Saturday, registration
April 24, 7:30 p. m. ....	Saturday, opening convocation
April 26, 8 a. m. ....	Monday, class work begins
June 19 .....	Saturday, first half of term ends
June 21 .....	Monday, second half of term begins
Aug. 14, noon .....	Saturday, spring-summer term ends

## INFORMATION ABOUT THE UNIVERSITY

## GENERAL STATEMENT

The fundamental aim of the University of Missouri is the development of the highest and most efficient type of citizen. For the purpose of attaining its aim, the University furnishes ample facilities for liberal education and for thoro professional training. The University is a part of the public educational system of the state.

## ORGANIZATION

The work of the University is now carried on in the following divisions:

- College of Arts and Science
- College of Agriculture
- School of Education
- School of Law
- School of Medicine
- School of Engineering
- School of Mines and Metallurgy
- School of Journalism
- School of Business and Public Administration
- Graduate School
- Extension Division

All of these divisions are at Columbia, with the exception of the School of Mines and Metallurgy, which is located at Rolla. In addition, emphasis is given particular lines of work by the establishment of minor divisions, the chief of which are the Agricultural Experiment Station, the Engineering Experiment Station, and the Missouri State Military School.

## LOCATION

The University of Missouri is located at Columbia, situated half way between St. Louis and Kansas City, near the center of the state. It is reached by the Wabash and by the Missouri, Kansas and Texas railways. Columbia is a progressive and prosperous town having doubled its population in the last few years.

Columbia may be characterized as a town of schools, homes, and churches, with enough of industrialism to make it efficient. It offers the convenience of a larger city without the counter attractions. The student is a predominant factor in Columbia.



## EQUIPMENT

The University grounds cover more than 800 acres. The main divisions are in the west campus, the east campus, the athletic fields, and the University farm.

The following University buildings are located at Columbia: Academic Hall; Library Building; Laws Observatory; separate buildings for chemistry, physics, biology, geology, engineering, manual arts, law, business and public administration; two power houses; Medical Laboratory Building; Parker Memorial Hospital; Agriculture Building; Horticulture Building; Parker Memorial Hospital; Agriculture Building; Horticulture Building; Schweitzer Hall for agricultural chemistry; green houses; Live Stock Judging, Poultry, Dairy, Farm Machinery, and Veterinary Buildings; the agricultural college farm barns and buildings; Switzler Hall for the School of Journalism; Gordon Hotel Building for home economics; Lathrop Hall, dormitory for men; Read Hall, dormitory for women; Rothwell Gymnasium; the houses for the President of the University and the Dean of the College of Agriculture; and High School and the Elementary School buildings, used for practice schools in the School of Education.

## FOR FURTHER INFORMATION

For further information in regard to the School of Medicine of the University, address

DEAN, FACULTY OF MEDICINE,  
UNIVERSITY OF MISSOURI,  
COLUMBIA, MISSOURI.

Full information regarding the University is given in the catalog, which will be sent on request without charge. For this or special bulletins of the College of Agriculture, School of Education, School of Law, School of Medicine, School of Engineering, School of Journalism, School of Business and Public Administration, Extension Division, and the Graduate School, write to

THE REGISTRAR,  
UNIVERSITY OF MISSOURI,  
COLUMBIA, MISSOURI.

LIST OF STUDENTS IN THE SCHOOL OF MEDICINE—  
SESSION 1917-18

Adrachinsky, Isaac  
Appleby, John I.  
Beck, Otto O.  
Bloomer, Gaylord T.  
Bouvy, Lee B.  
Braden, David R.  
Brown, Casper H.  
Brown, Susan W.  
Brummitt, Charles F.  
Bryan, William J.  
Bunch, Harold M.  
Cady, Lee D.  
Calderon, R. Isabell  
Carlisle, John B.  
Chovey, Paul P.  
Clark, Eugene E.  
Clay, Calvin  
Coffey, Jesse O., Jr.  
Collier, William D.  
Coughlin, Albert N.  
Davis, Luther C.  
Davis, Morris  
Deitchman, Louis S.  
Evans, J. Lane  
Ewing, Harry R.  
Fellows, William  
Gaebler, Oliver R.  
Gambee, Louis P.  
Ginsberg, A. Morris  
Greene, Charles W.  
Griffith, George W.  
Halley, Charles R., Jr.  
Harper, Henry W., Jr.  
Harvey, Horace G.  
Heidorn, William B.  
Heins, Lawrence G.  
Holton, Stanley W.  
Howell, James A.  
Humberd, Charles D.  
Indenbaum, Samuel  
Jaeger, James R.  
Johnson, Franklin P.

Love, Walter S.  
Lowrey, Ford J.  
Lyon, Alfred M.  
Mantz, Herbert L.  
Milbank, George E.  
Morrison, George B.  
Morton, Paul C.  
Muir, Hugh P.  
McDaniel, Mary E.  
McLoon, Mary A.  
McPherron, Raymond H.  
McWilliams, Cline V.  
Nelson, Erwin E.  
Ogilvie, John H.  
Pittam, Radford F.  
Pittman, John E.  
Probert, William H.  
Putter, Benjamin B.  
Rice, Carl E.  
Rose, Myron  
Rubenstein, Hyman  
Sach-Rowitz, Alvin  
Schneck, Nathan  
Schneiderman, Henry  
Seibel, Richard A.  
Settles, Eugene L.  
Showman, Winifred A.  
Smith, John R.  
Stahl, Fred A.  
Thorn, Druery R.  
Titterington, Paul F.  
Vogel, Eugene A.  
Waller, Riley M.  
Weber, Albert G.  
Webster, Joseph G.  
Williamson, Carl S.  
Willits, Lyle G.  
Wilson, Leslie A.  
Wilson, Lucius R.  
Wilson, Ralph R.  
Ziegler, William H.

## SESSION 1918-19

Atwood, Harry D.  
**Backlar, Joseph**  
Barlow, Orpheus W.  
Barnes, Hugh R.  
Bilsky, Nathan  
Bohrer, Eldon C.  
Brody, Louis  
Brown, Caspar H.  
Brummitt, Charles F.  
Bunch, Harold M.  
Calderon, Isabel L.  
Chamberlain, Gilbert L.  
Chilton, Jackson V.  
Collier, William D.  
Coughlin, Albert N.  
Davidman, Anna  
Davis, Morris  
Deitchman, Louis S.  
Eads, Marion F.  
Ewing, Harry R.  
Gaebler, Oliver H.  
Griffith, George W.  
Harper, Henry W., Jr.  
Harvey, Horace G., Jr.  
Hawkins, John R.  
Haynes, Robert C.  
Heins, Lawrence G.  
Holton, Stanley W.  
Indenbaum, Samuel  
Kaminsky, Jacob  
Kibbe, John H.  
Love, Walter S.  
Lowrey, Ford J.

Meredith, Guy I.  
Milbank, George E.  
Morrison, George B.  
Morton, Paul C.  
Muir, Hugh P.  
Musick, Elmer R.  
McWilliams, Cline V.  
Norton, William H.  
Ogilvie, John H.  
Pittman, John E.  
Post, Winfred L.  
Powell, John R.  
Probert, William H.  
Pursel, Nita I.  
Putter, Benjamin B.  
Quinn, William R.  
Reed, Carl H.  
Rubinstein, Hyman  
Rummell, Robert J.  
Schneck, Nathan  
Settles, Eugene L.  
Sewell, Arthur B.  
Showmon, Winfred A.  
Spurling, Roy G.  
Shrader, Eugene L.  
Stahl, Fred A.  
Thorn, Druery R.  
Vogel, Eugene A.  
Webster, Joseph G.  
Weyman, Morie F.  
Willits, Lyle G.  
Wilson, Ralph R.  
Ziegler, William H.

## THE PUBLIC HEALTH LABORATORY

The Public Health Laboratory is situated in the Medical Building and is conducted as a part of the Department of Preventive Medicine.

While the work of this laboratory has been going on for a number of years, it has recently been made the official laboratory of the State Board of Health of Missouri, and in the future not only will carry on the work formerly done, but also will care for that which has up to the present time been done by the State Board of Health at Jefferson City. This arrangement will more than double the number of specimens sent in for examination as well as the requests for vaccines, etc., and will afford an abundance of material for study by medical students and others interested in the conduct of public health laboratories.

The advantages of such abundant material and of such study are obvious. Courses are offered in the Department of Preventive Medicine and Bacteriology to advanced students who wish to specialize in public health work. These courses are especially adapted to meet the needs of physicians who are preparing themselves for the duties of city and county public health officers. The importance of this training and service is now universally recognized and is being more and more emphasized every year.

In the laboratory all the usual routine examinations are carried out. Public water supplies are examined for their potability. Private water supplies are examined when the request comes from a physician and there seems to be a good reason for it. In all cases specially prepared bottles are shipped in containers suitable for maintaining a low degree of temperature so that the specimens reach the laboratory in good condition for examination.

Blood is examined for the Widal reaction (typhoid fever) and for malarial parasites. Restricted service is maintained in the making of blood examinations for the detection of syphilis, the purpose being to co-operate in every way with Federal or State agencies in the examinations. Throat cultures are examined for diphtheria, streptococcus, etc.

Sputum is examined for the presence of the tubercle bacillus. When routine examinations of sputum are required, the laboratory director will inform correspondents of the method of the laboratory concerning sending of proper containers.

Pathological specimens of all kinds are examined and reports made on them after the tissues have been hardened, stained, and microscopically examined by the experts in the pathological laboratory of the University.

Pus is examined for gonococcus, and when the patient is available, examination will be made for the *spirochaeta pallida*.

The brains of animals suspected of rabies are examined for the

presence of Negri bodies. In the case of positive findings, any person who has been bitten will be given the Pasteur anti-rabic treatment at the Parker Memorial Hospital. The vaccine used will be obtained from the U. S. Public Health Service, Washington, D. C., and will be administered free of charge to indigent persons of the state at this laboratory only. The treatment requires twenty-one days, and should be begun within fourteen days from the time the patient was bitten.

When the treatment is desired the laboratory should be notified by wire at least three days before the patient arrives in Columbia, thus allowing ample time to secure the individual treatment from the laboratory at Washington.

The facilities of the laboratory are open to doctors of the State without charge. The laboratory has the privilege of sending pathological material through the mail. Proper containers for specimens will be sent to physicians thruout the State on request without charge, except that the cost of carriage back and forth must be paid in the case of heavy material such as containers for water samples.

The value of laboratory diagnosis in disease has been amply demonstrated and is of course well known to all physicians, who are urged to make full use of the facilities now offered in the University thru the Public Health Laboratory.

Correspondence of all kinds and telegrams. as well as specimens, should be addressed to

PUBLIC HEALTH LABORATORY,  
UNIVERSITY OF MISSOURI,  
COLUMBIA.





THE  
UNIVERSITY OF MISSOURI  
BULLETIN

GENERAL SERIES

EDITED BY  
VAUGHN BRYANT  
*University Publisher*

The General Series of the University of Missouri Bulletin consists of the general catalog and the announcements of the various colleges and schools which compose the University. These announcements will be sent free upon request to the Registrar, University of Missouri, Columbia, Missouri.

Published by  
UNIVERSITY OF MISSOURI  
COLUMBIA, MISSOURI

The University of Missouri Bulletin—issued  
three times monthly; entered as second class  
matter at the postoffice, Columbia, Missouri.











UNIVERSITY OF ILLINOIS-URBANA



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